

Community Assistantship Program

**Friends of the Vermillion River
Water Trail Study**

Friends of the Vermillion River Water Trail Study

Prepared in partnership with
Friends of the Vermillion River Water Trail

Prepared by
Christopher Ochs
Graduate Student
University of Minnesota
October, 2005

CAP Report 089

October 2005

CAP is a cross-college, cross-campus University of Minnesota initiative coordinated by the Center for Urban and Regional Affairs.

Funds for this project were generously provided by the McKnight Foundation.

This is a publication of the Center for Urban and Regional Affairs (CURA), an all-University applied research and technology center at the University of Minnesota that connects faculty and students with community organizations and public institutions working on significant public policy issues in Minnesota. The content of this report is the responsibility of the author and is not necessarily endorsed by CAP, CURA or the University of Minnesota..

CAP Report 089

© 2005 by The Regents of the University of Minnesota. This publication may be reproduced in its entirety (except photographs or other materials reprinted here with permission from other sources) in print or electronic form, for noncommercial educational and nonprofit use only, provided that two copies of the resulting publication are sent to the CURA editor at the address below and that the following acknowledgment is included: "Reprinted with permission of the University of Minnesota's Center for Urban and Regional Affairs (CURA)."

For information regarding commercial reprints or reproduction of portions of this publication, contact the CURA editor at the address below.

This publication may be available in alternate formats upon request.

Center for Urban and Regional Affairs (CURA)
University of Minnesota
330 HHH Center
301--19th Avenue South
Minneapolis, Minnesota 55455

Phone: (612) 625-1551
Fax: (612) 626-0273
E-mail: cura@umn.edu
Web site: <http://www.cura.umn.edu>

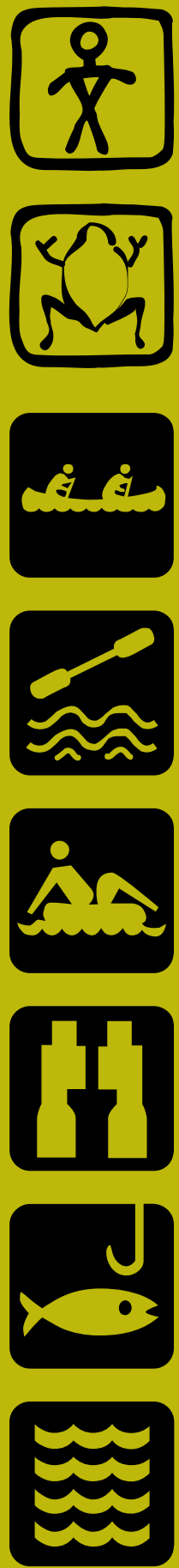
The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

Presentation for the Minnesota Department of Natural Resources - Central Region and the Friends of the Vermillion River Water Trail (FVRWT)

FVRWT Mission:
To enhance the recreational, educational and resource protection opportunities of the Vermillion River; and to increase public awareness of and appreciation for the river's aesthetic and wildlife habitat values.

Goals of this project-

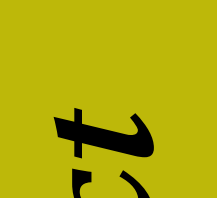
- Identify potential canoe trail access sites on the upper and lower reaches of the Vermillion River
- Identify potential kayak trail access points in the gorge portion of the Vermillion River
- Explore and develop the process of legislative action required to change the designation of the Vermillion River to an official recreation river for water trails



protect

educate

recreate

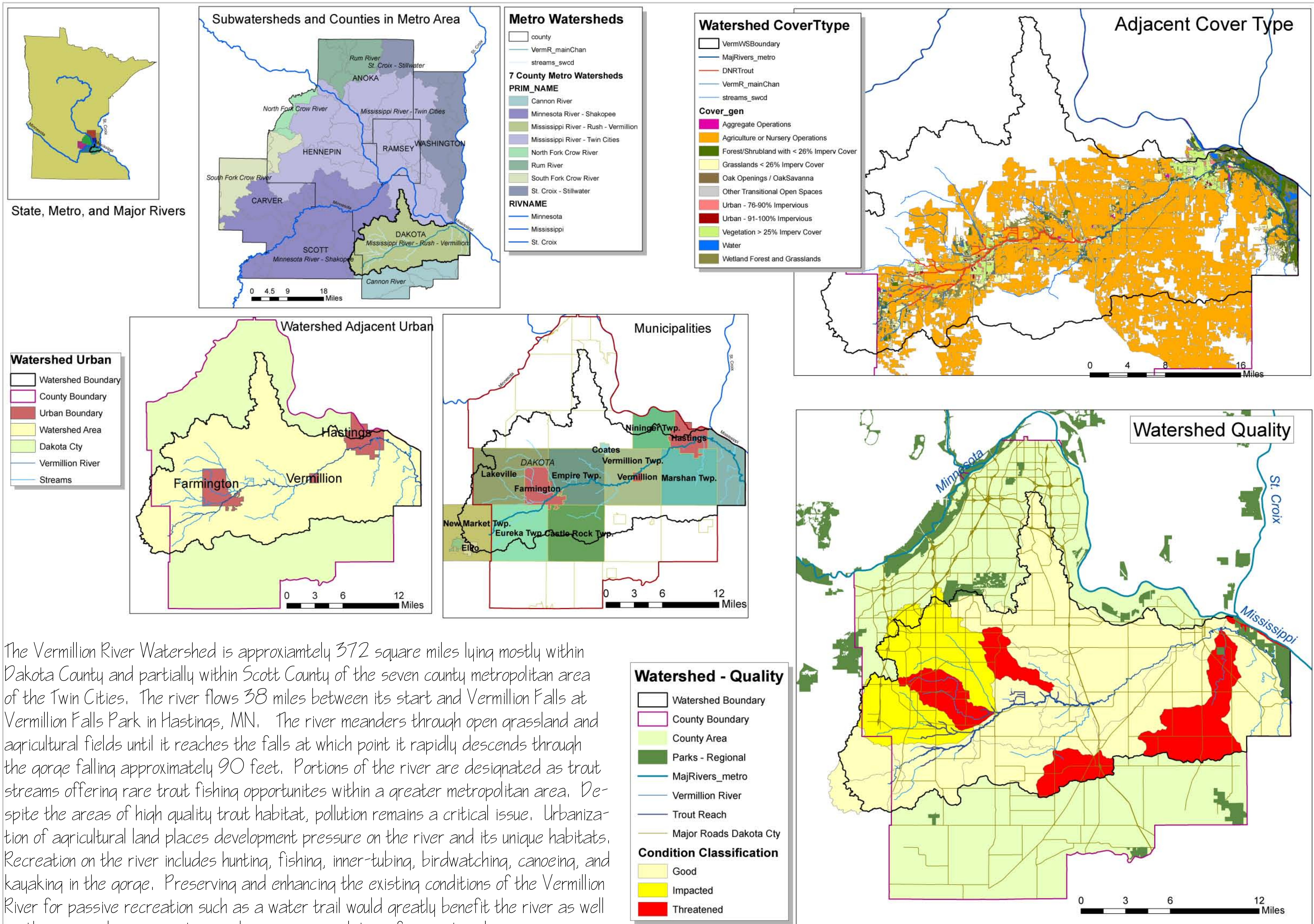


protect

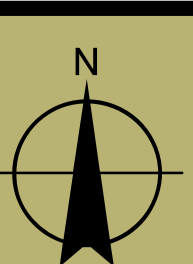
educate

recreate

INVENTORY ANALYSIS REGIONAL - DAKOTA COUNTY / VERMILLION WATERSHED

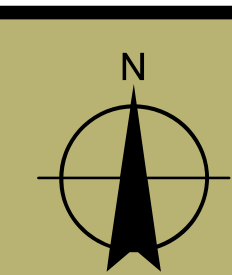


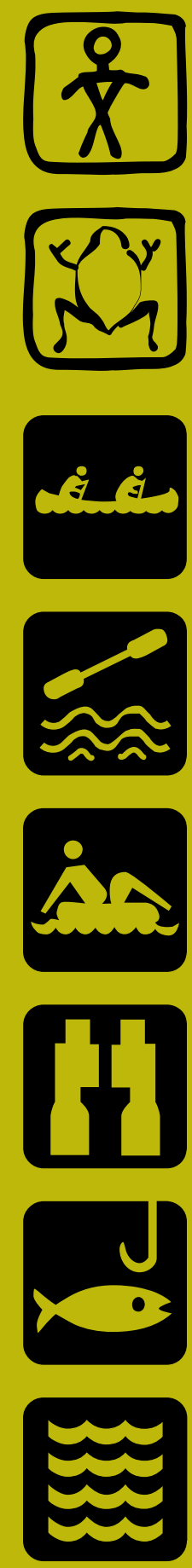
The Vermillion River Watershed is approximately 372 square miles lying mostly within Dakota County and partially within Scott County of the seven county metropolitan area of the Twin Cities. The river flows 38 miles between its start and Vermillion Falls at Vermillion Falls Park in Hastings, MN. The river meanders through open grassland and agricultural fields until it reaches the falls at which point it rapidly descends through the gorge falling approximately 90 feet. Portions of the river are designated as trout streams offering rare trout fishing opportunities within a greater metropolitan area. Despite the areas of high quality trout habitat, pollution remains a critical issue. Urbanization of agricultural land places development pressure on the river and its unique habitats. Recreation on the river includes hunting, fishing, inner-tubing, birdwatching, canoeing, and kayaking in the gorge. Preserving and enhancing the existing conditions of the Vermillion River for passive recreation such as a water trail would greatly benefit the river as well as the surrounding communities and a growing population of recreational users.





Vermillion River Water Trail





protect

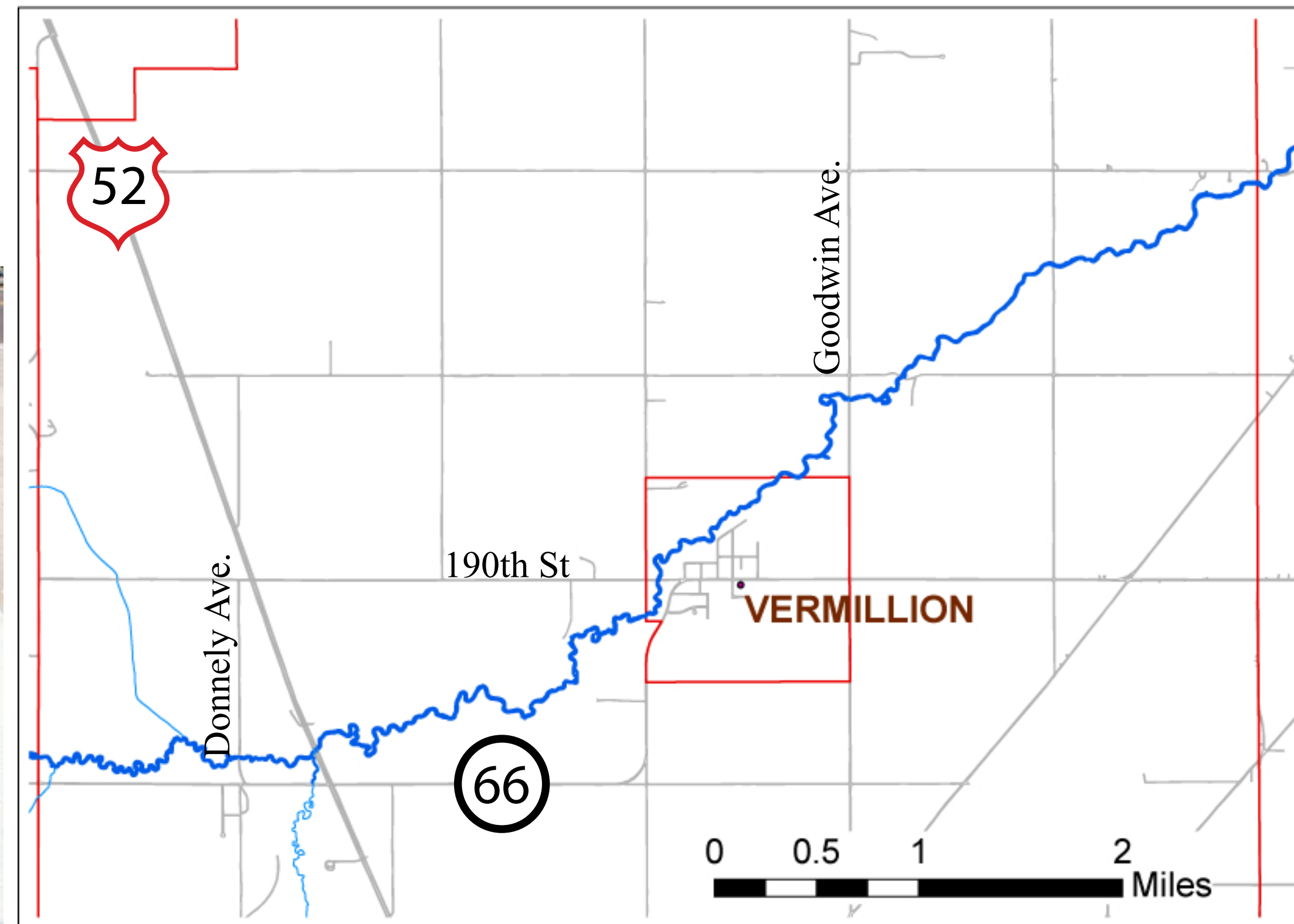
educate

recreate

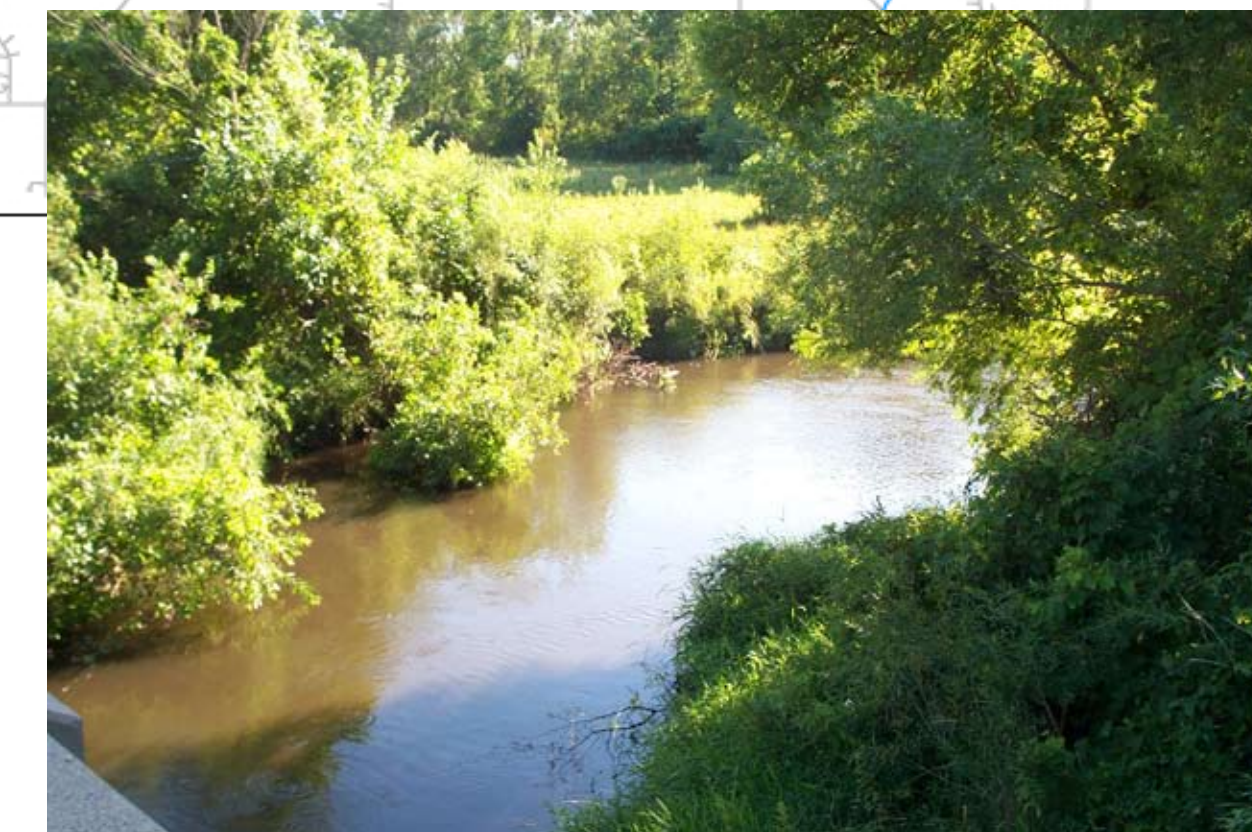


Bridge on Donnelly Avenue

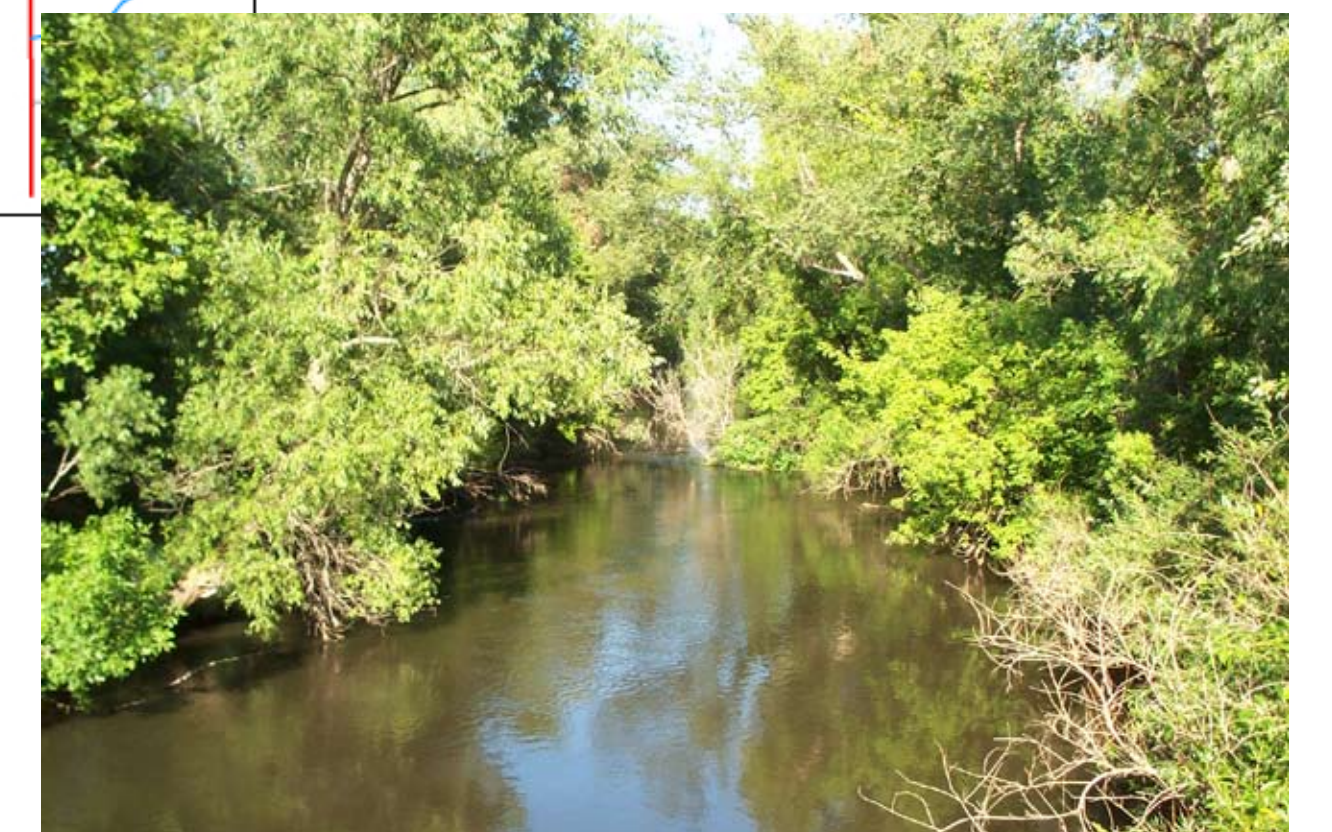
NO PARKS!
But the Right-of-
way will do!



INVENTORY ANALYSIS LOCAL - VERMILLION TO HASTINGS



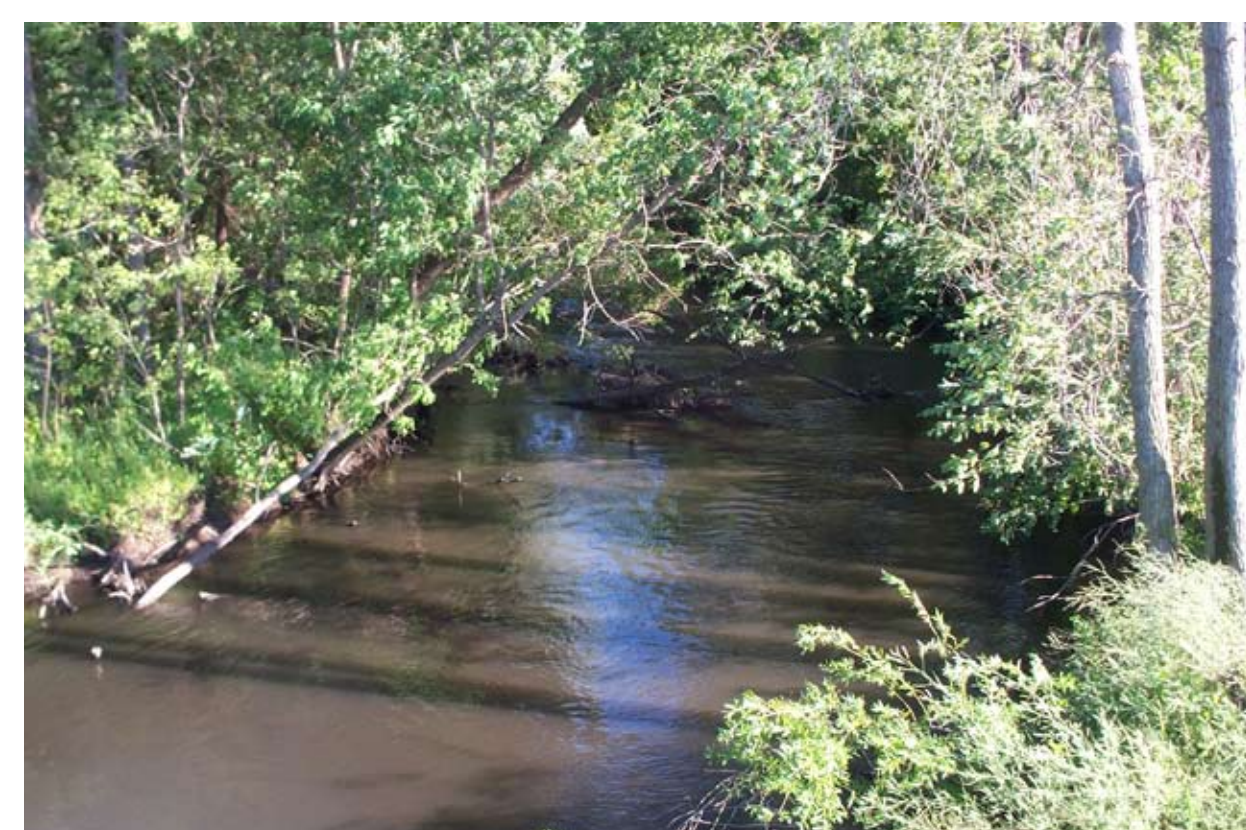
Upstream fom Goodwin Ave.



Downstream



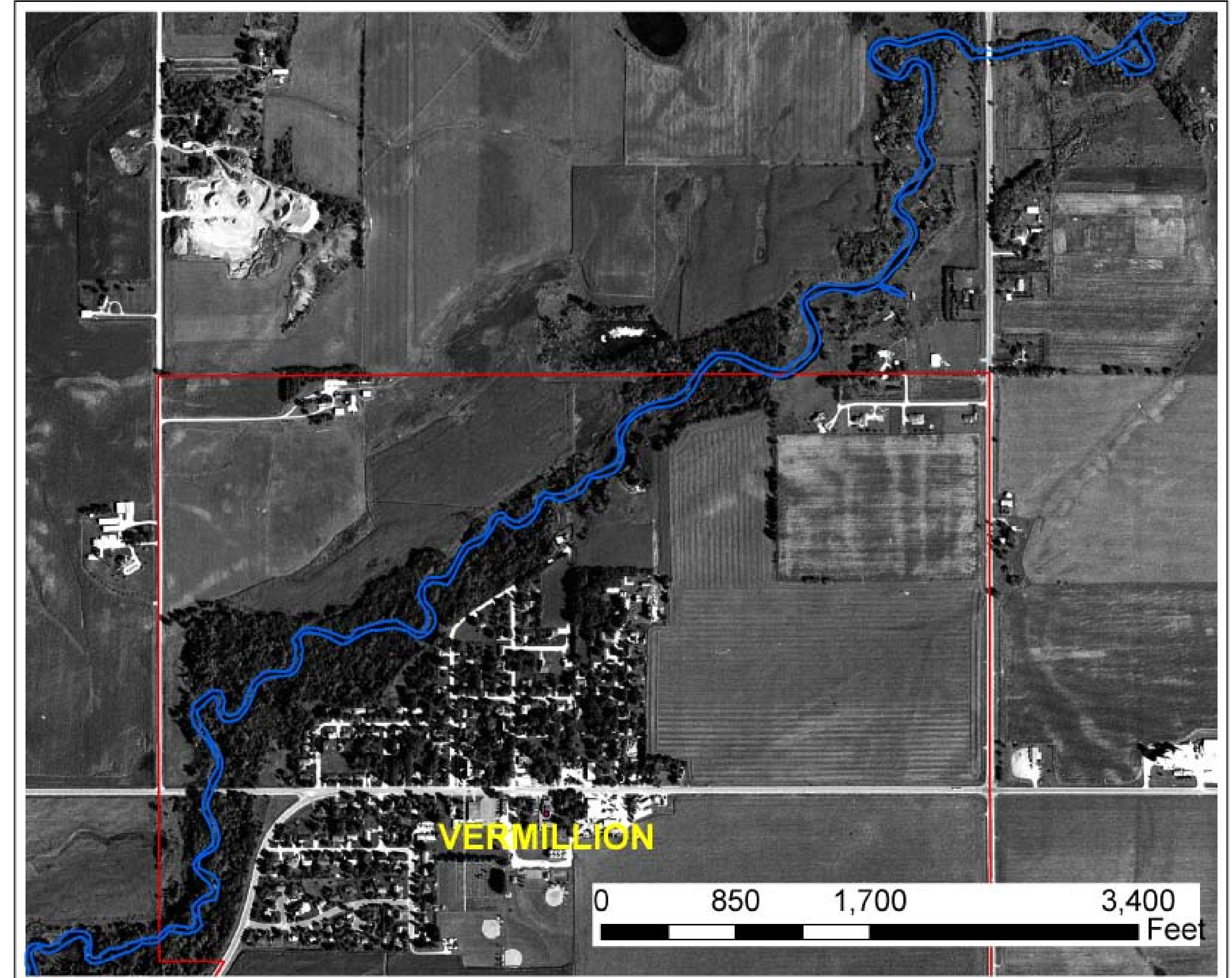
Eric and Rickey are off tubing.



Upstream from 190th St.



Downstream



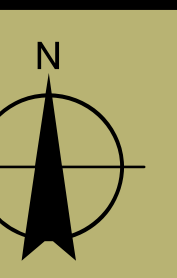
Vermillion River Water Trail

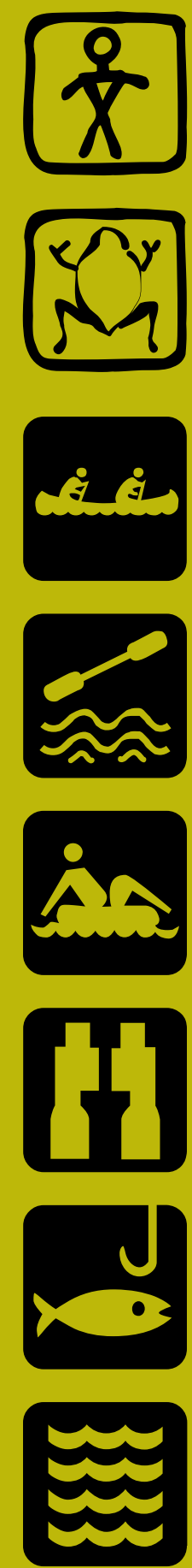
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
4





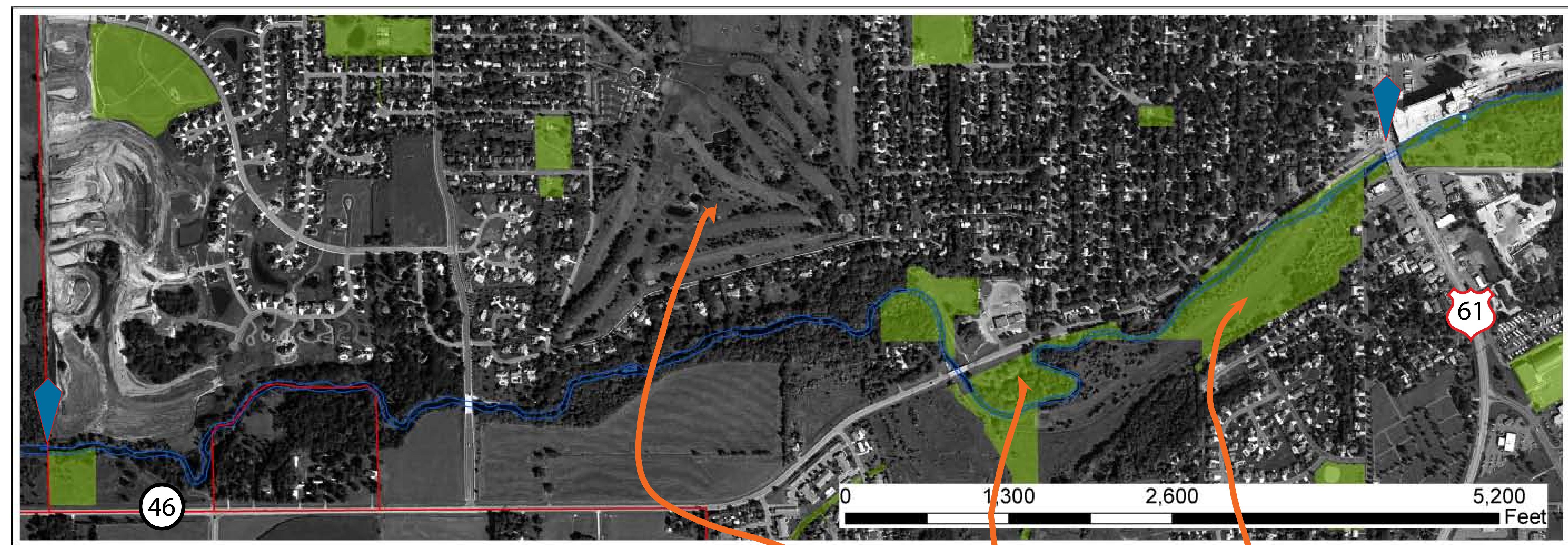
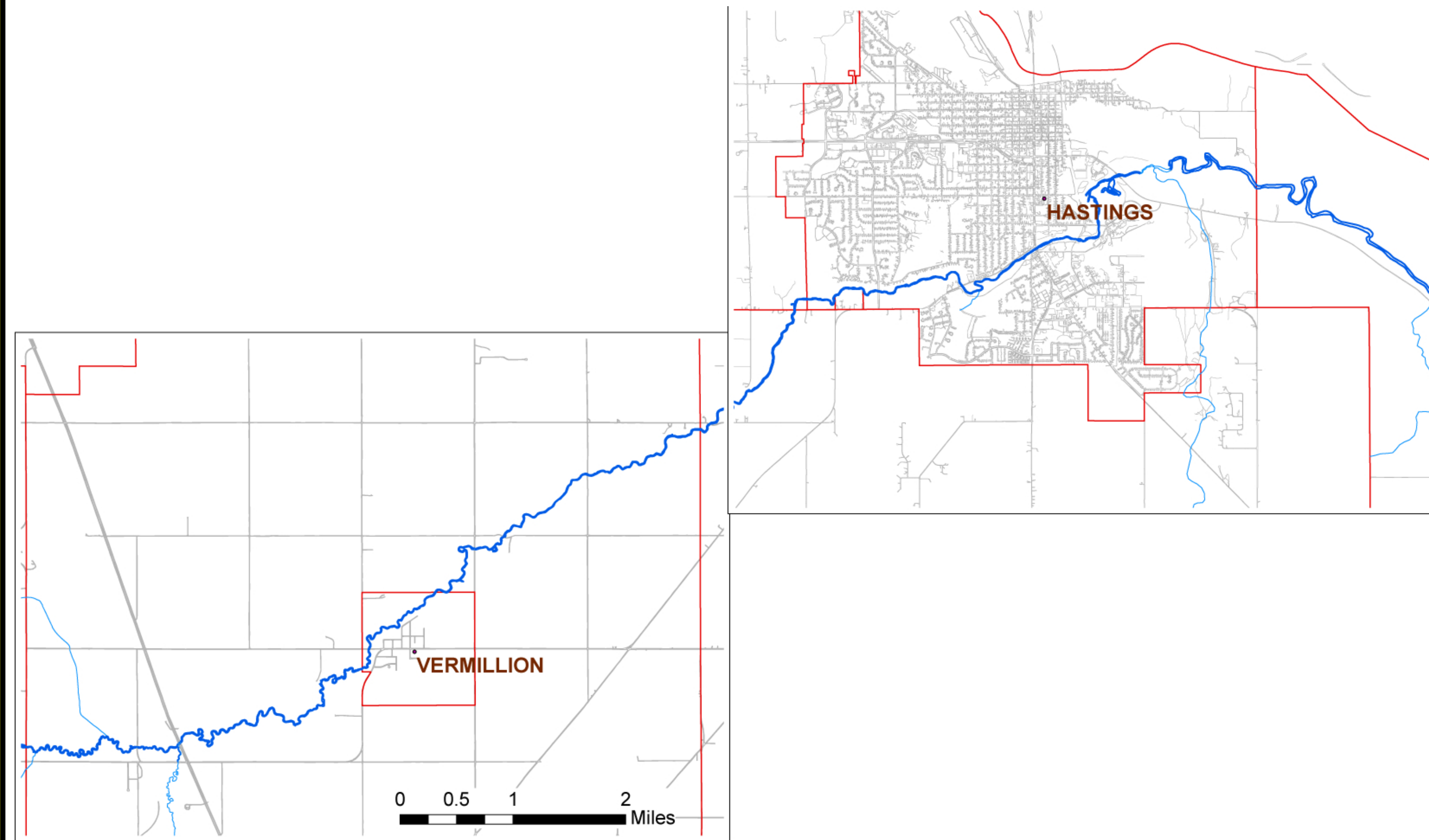
protect

educate

recreate

INVENTORY ANALYSIS LOCAL - VERMILLION TO HASTINGS

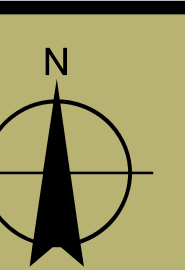
The Vermillion River enters Hastings from the west and winds through residential and industrial areas, but also becomes part of Hastings valuable extensive park system.

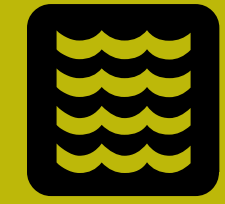
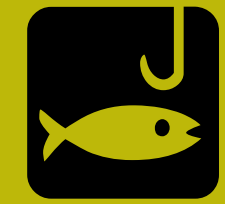
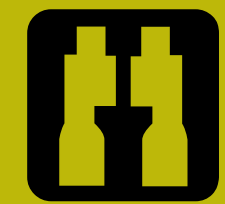


2.66 miles

Hastings Country Club

Vermillion Falls Park



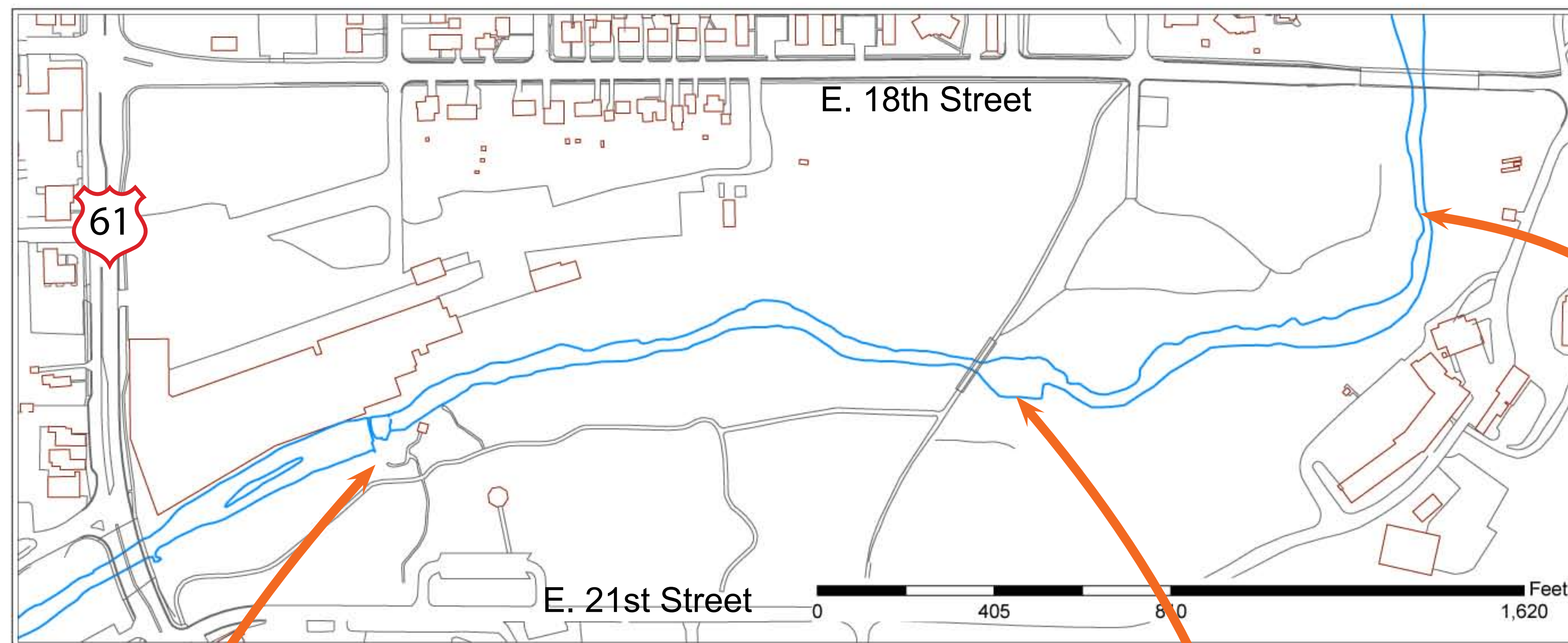


protect

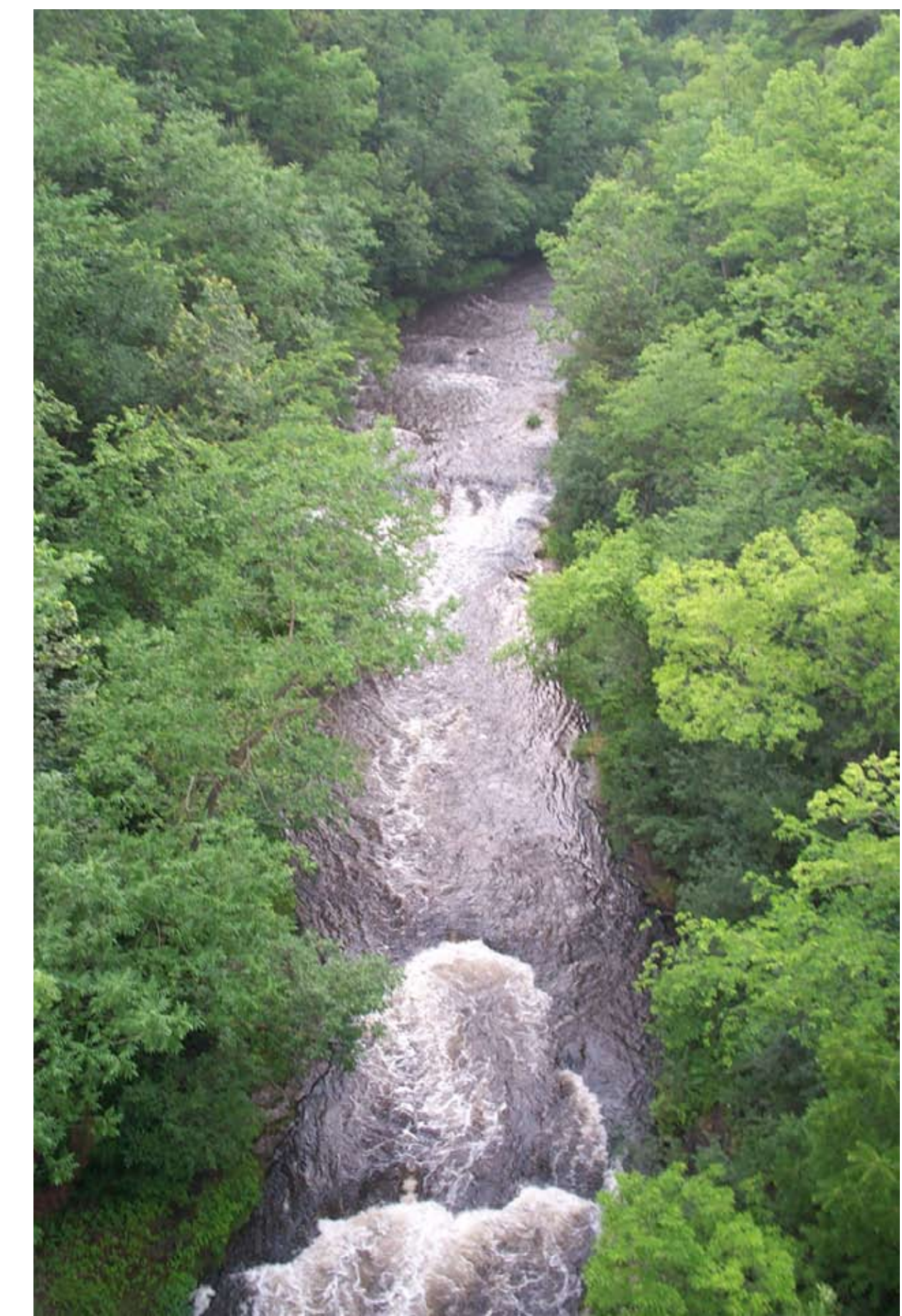
educate

recreate

INVENTORY ANALYSIS LOCAL - HASTINGS GORGE



Fast water, a.k.a. "Hole" to kayakers



View upstream from former rail bridge

Gorge length is over a half mile long, approximately 3400 feet from the falls at Vermillion Falls Park on the east side of US Hwy 61 to just past 18th street.

Wall height along the gorge ranges between 40 and 80 feet from crest to toe consisting of limestone bedrock formations atop of St. Petersburg sandstone bedrock.

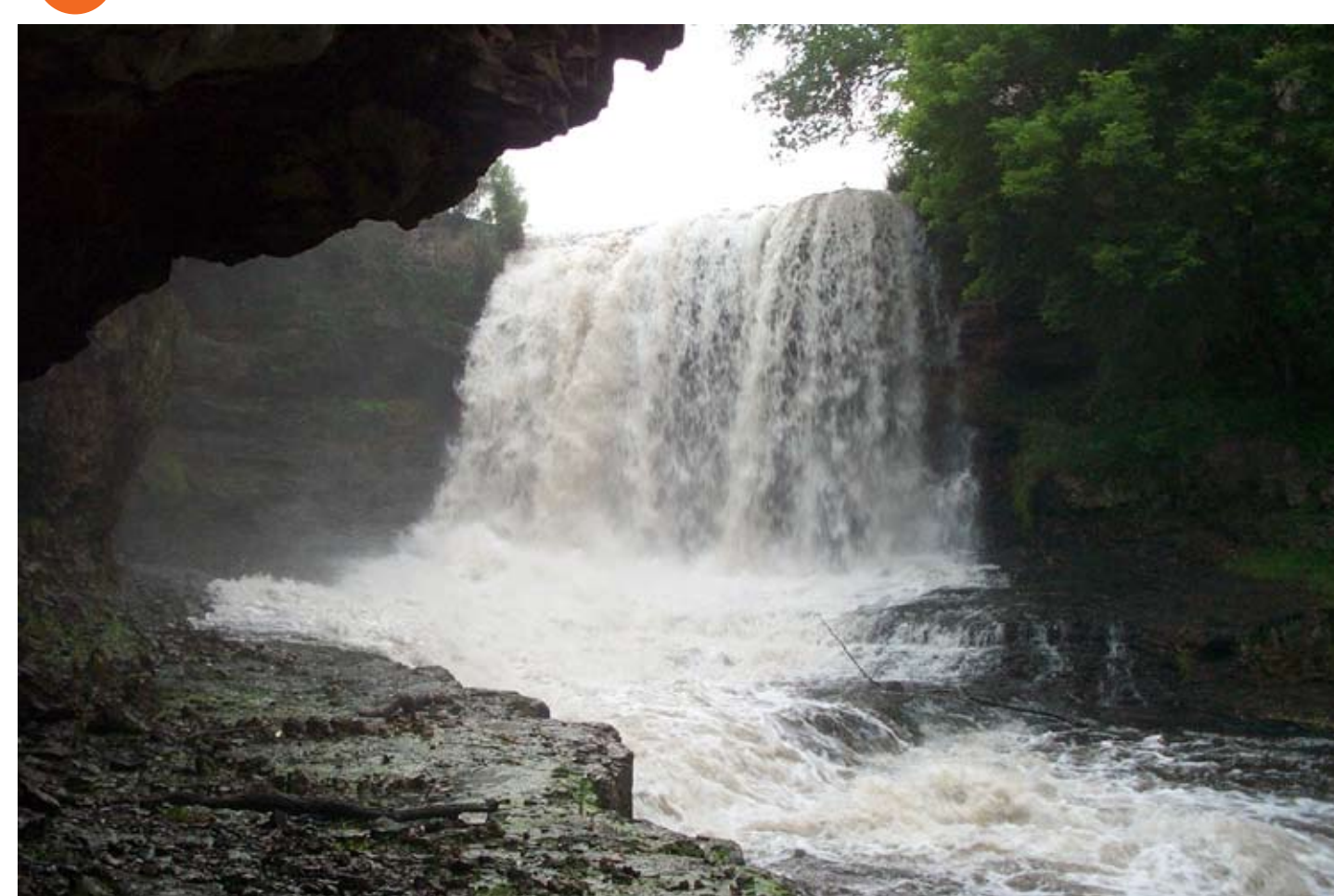
Gorge is bounded by city parks for most of the stretch.

Flow is measured in Empire Twp. The annual mean flow for 33 years of data is 76.5 cfs and has ranged between 10 cfs and 400 cfs.

Falls height is approximately 50 feet at an elevation of 774 ft. Elevation at the bottom is 724 ft. and drops to 684 ft. at the 18th street overpass.



"Pool" underneath former railroad bridge



Vermillion Falls



Old Mill Ruin rising up from river, Old Mill Park

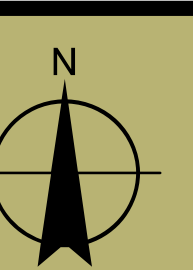
Vermillion River Water Trail

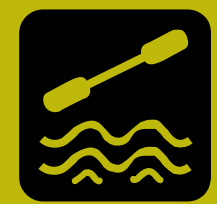
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
6

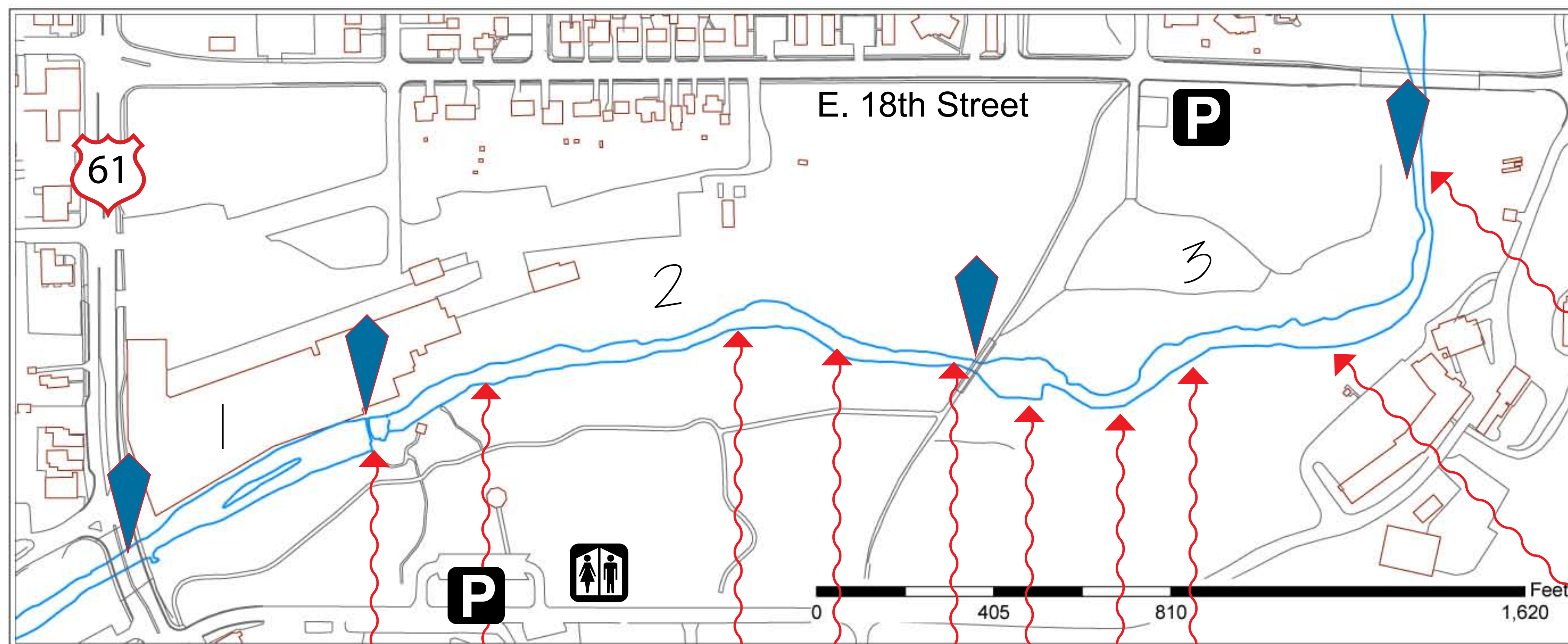




protect

educate

recreate



Reach
1. 585 ft
2. 1420 ft
3. 1364 ft
(3369' Approx. Dist.)

Warm-up wave

Falls

Donut hole

S-bend

Pool, 2nd
put-in

Railroad

Triple Drop

Rope ledge

Vermillion Falls



Fast water at Donut hole



Middle of S-bend

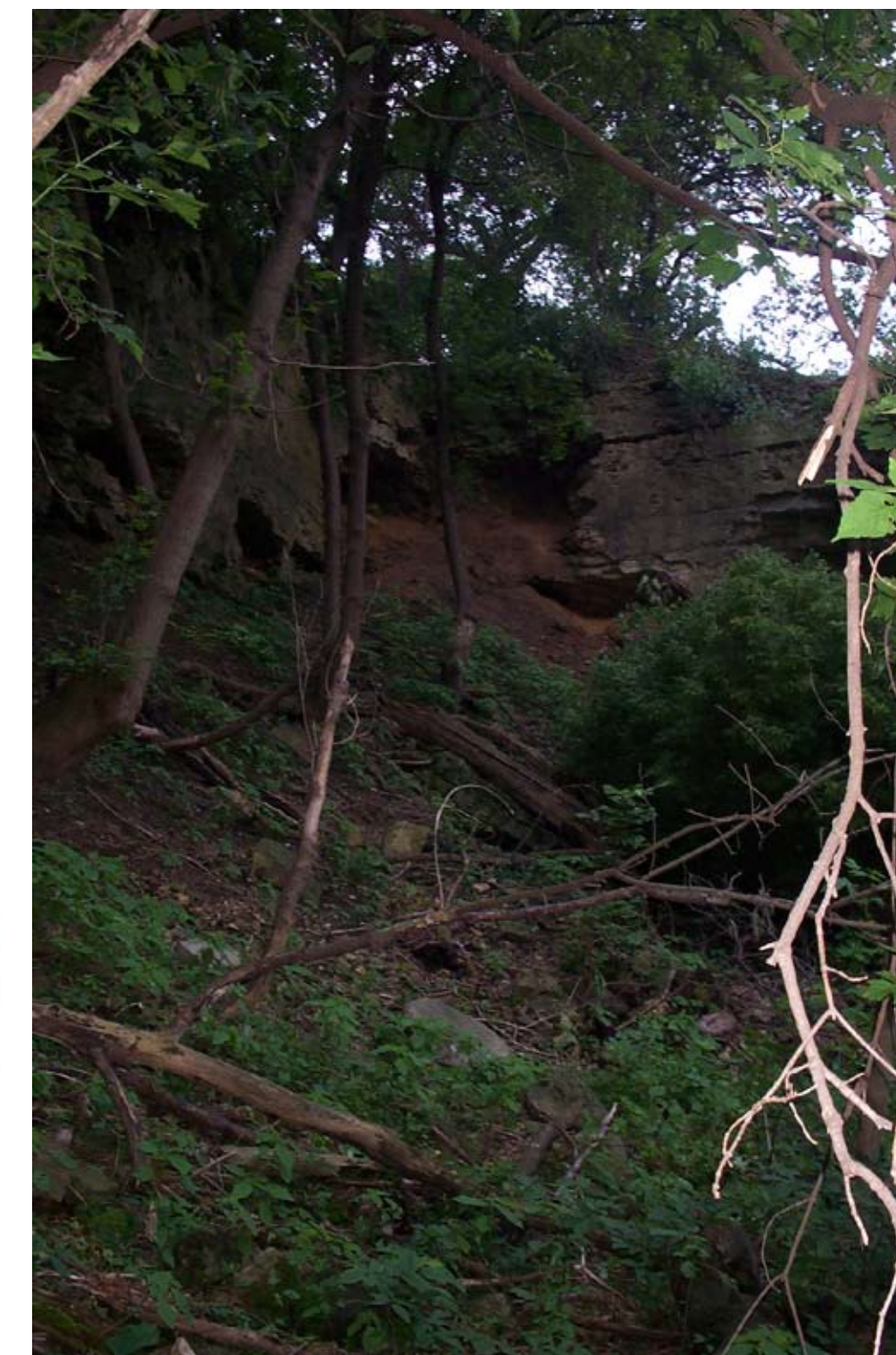


Bottom of S-bend



Easing out of Lower ledge

INVENTORY ANALYSIS LOCAL - HASTINGS GORGE



Gorge wall and steep slope near falls



Slope degradation on goat paths



Old Mill Ruin,
take out

Upstream at Old Mill - takeout



Goat path at Old Mill

Lower ledge

Series of rapids attract a fleet of kayakers. Best source of rapids for kayaking within 2 hours of the metropolitan area.

Classified as Class II and III rapids by American Whitewater kayaking organization.

www.americanwhitewater.org

Up to 40 kayakers per week recreate when flows exceed 80 cfs. Kayak-able as low as 40 cfs.

Seven "holes" in the stretch where kayakers exercise their skills.

Difficult and dangerous to descend gorge, but it is done by kayakers and the curious alike.

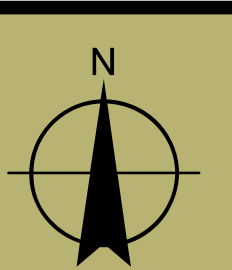
Vermillion River Water Trail

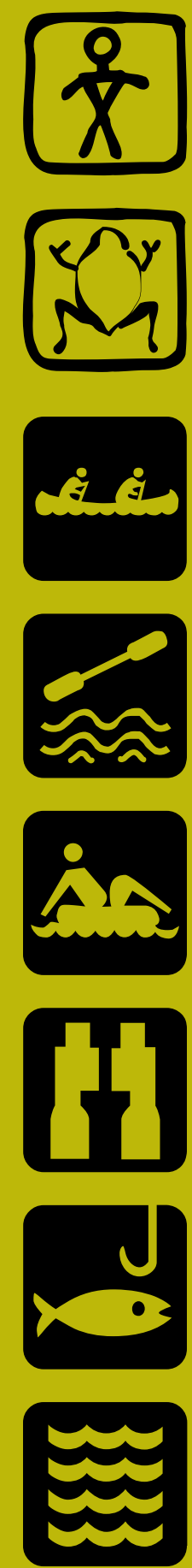
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
7



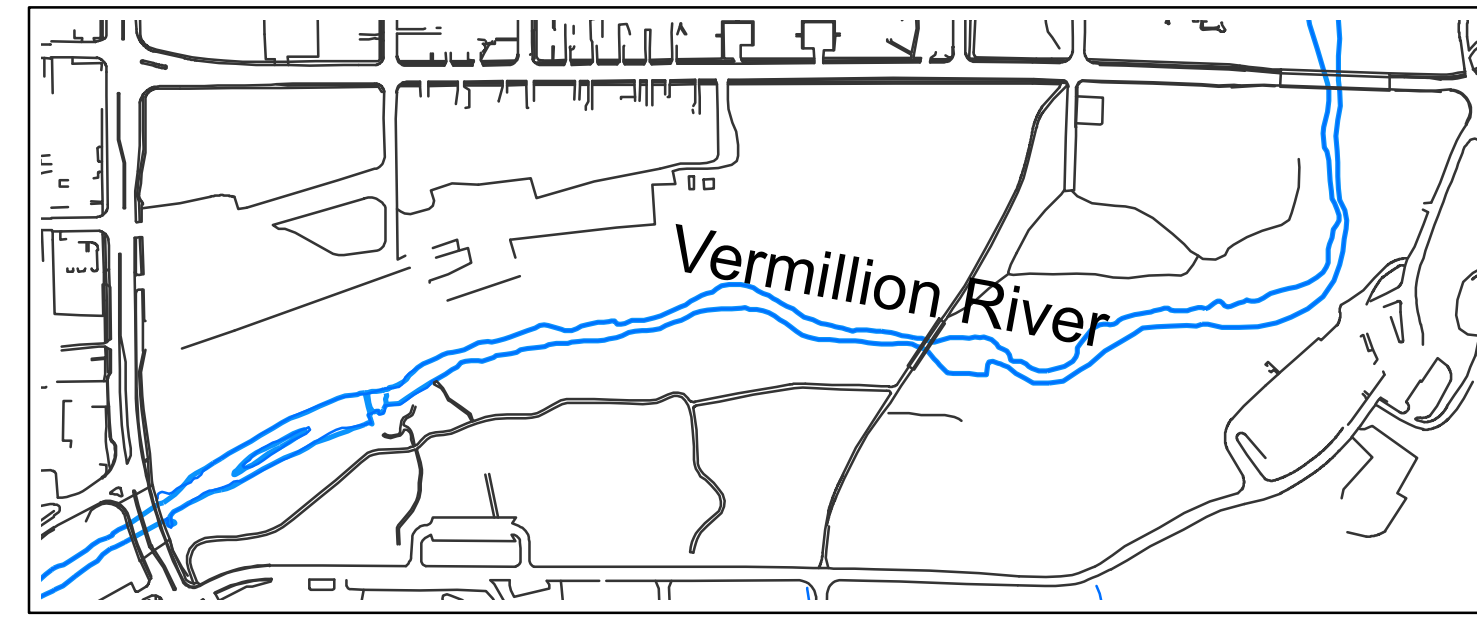


protect

educate

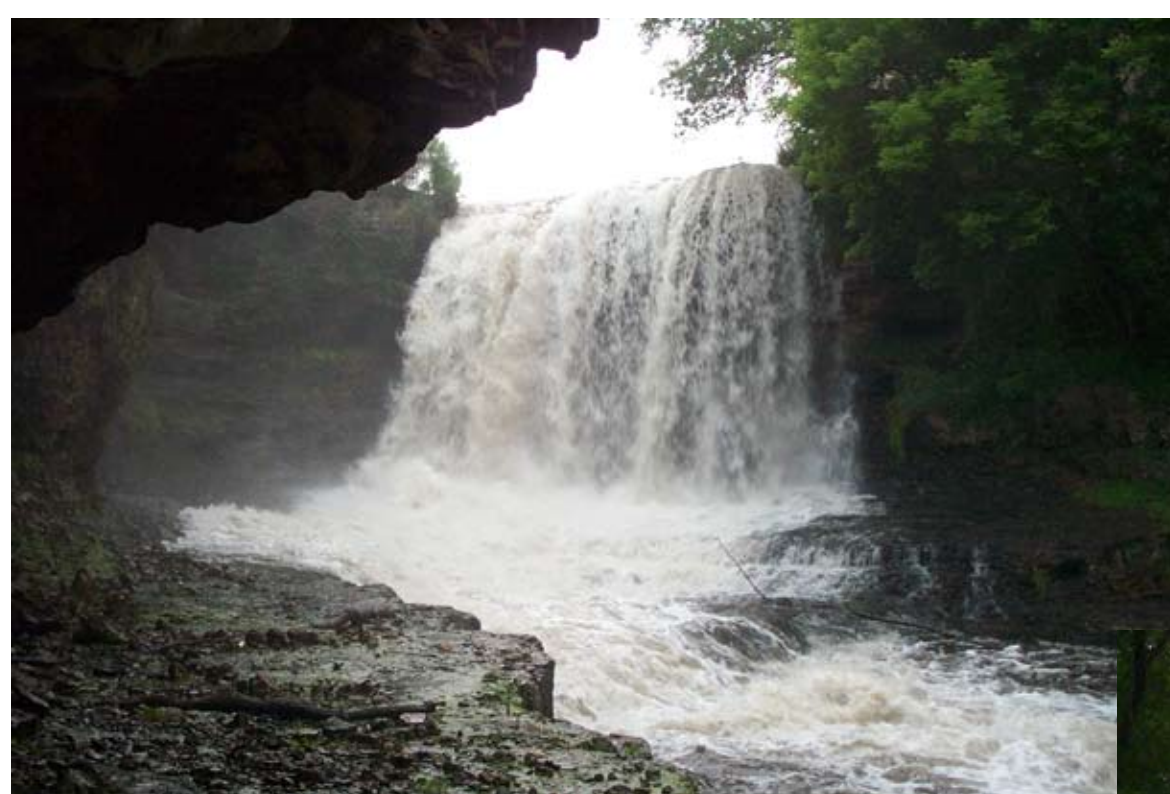
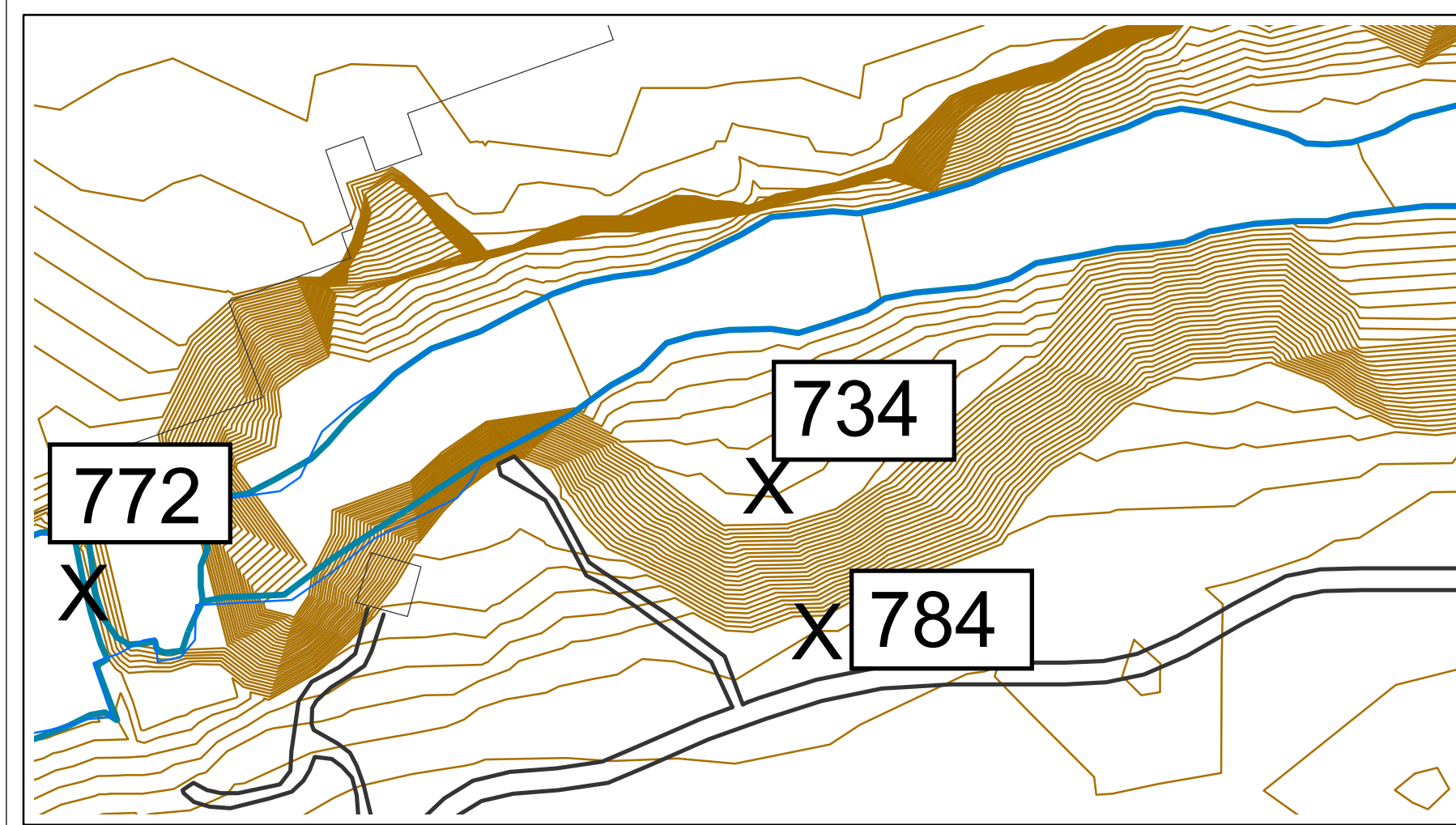
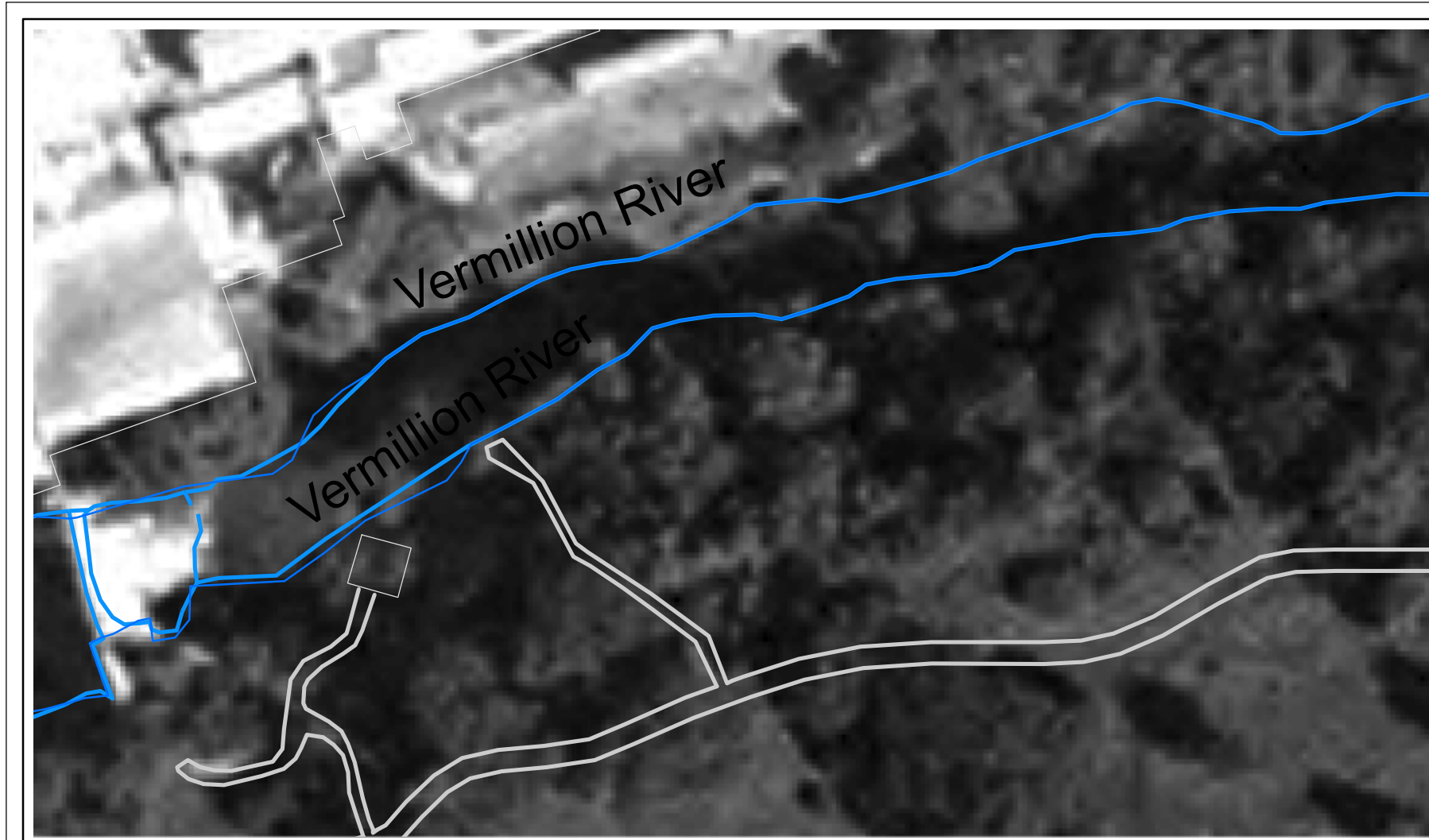
recreate

INVENTORY ANALYSIS LOCAL - HASTINGS GORGE



Gorge walls are extremely steep and very difficult to ascend or descend, but not impossible in most areas. Numerous recreaters and curious explorers manage to navigate their way to the river. Spot elevations are measured in feet.

Vermillion Falls

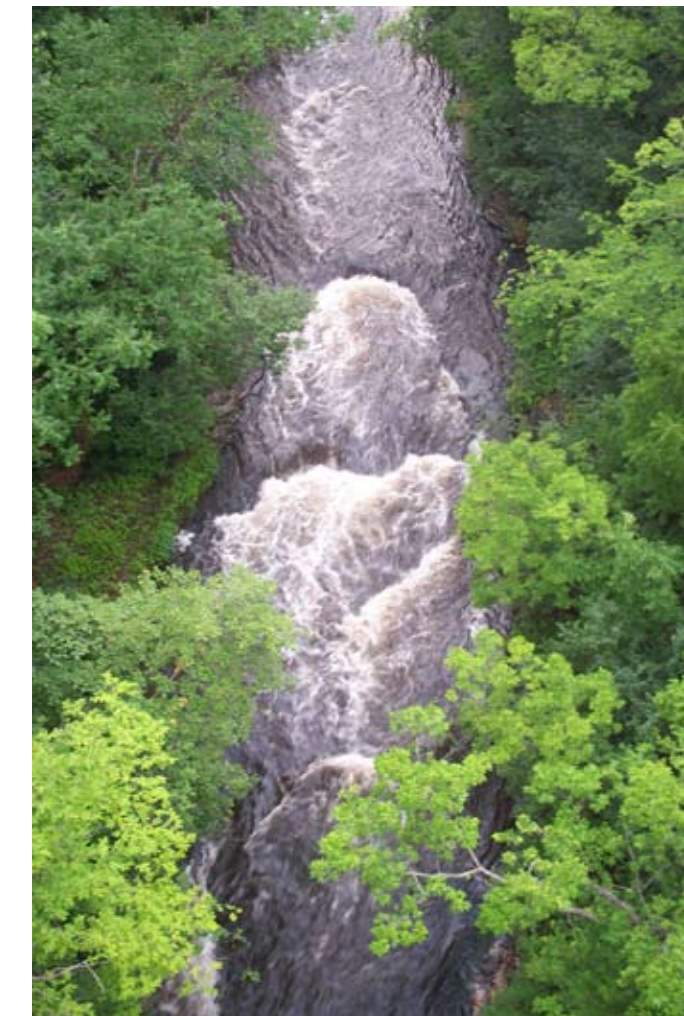
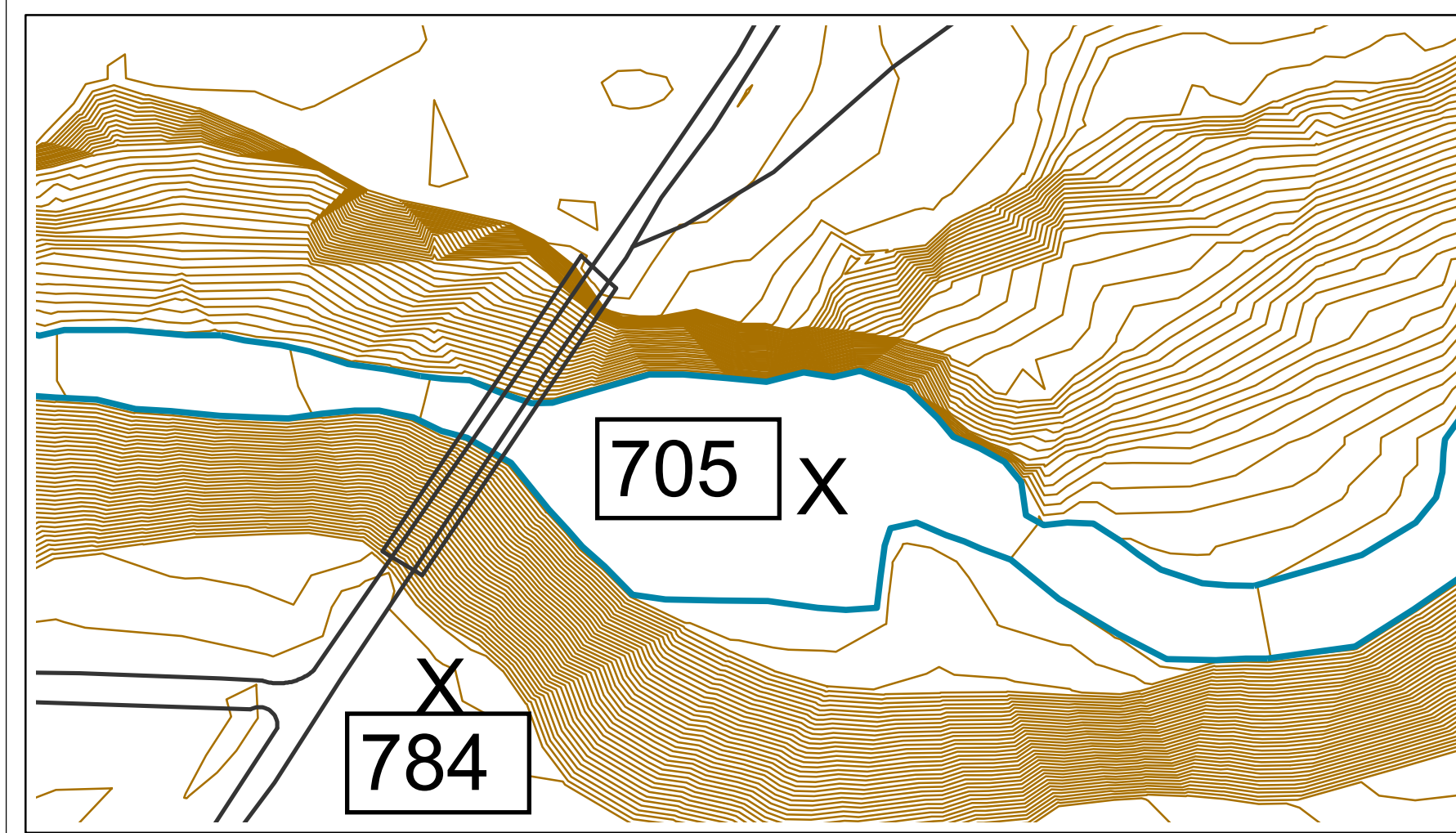
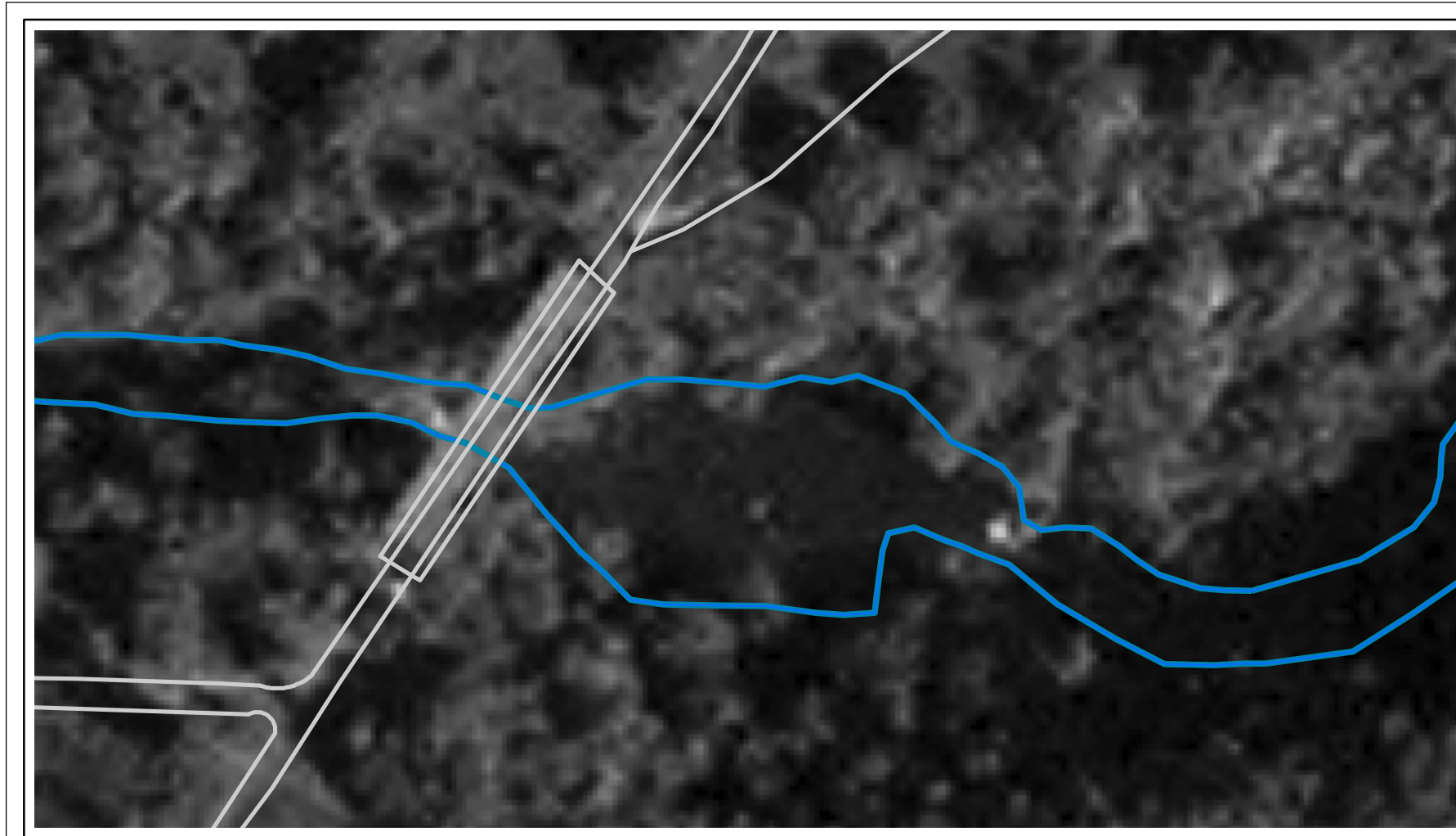


Vermillion Falls



Con-Agra Mill

Bike/ Ped path, Former Railroad Br.



Triple-Drop

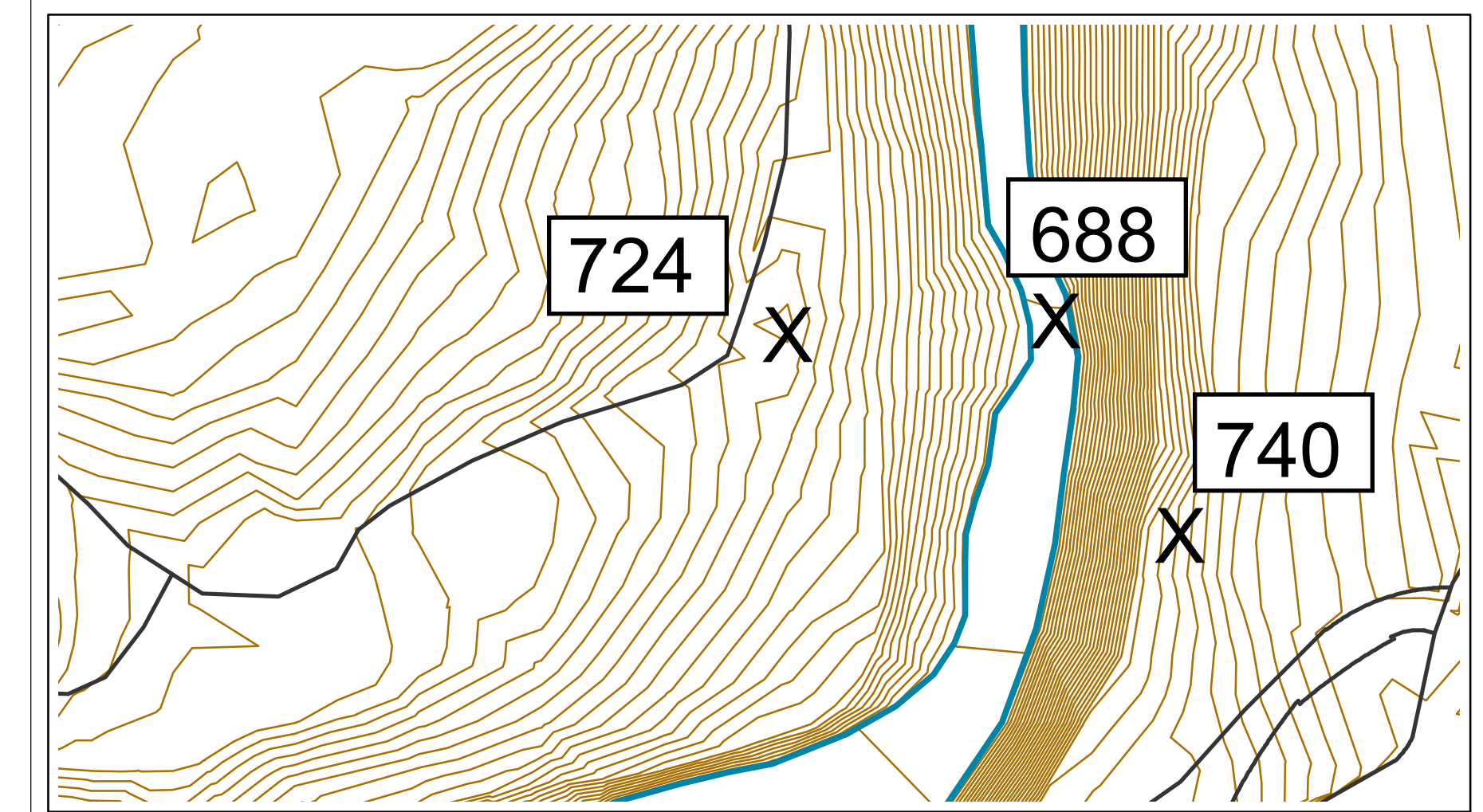
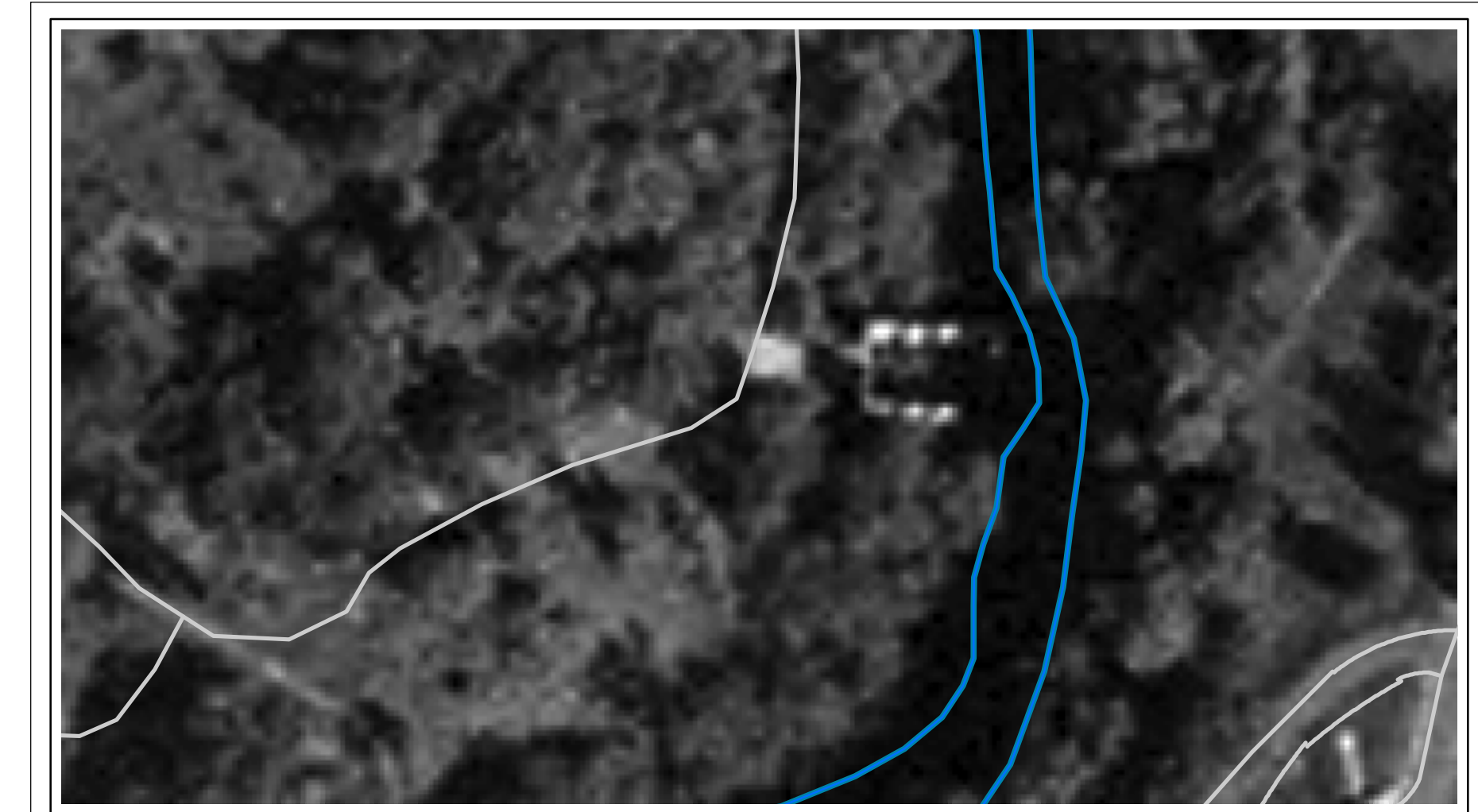


Pool under RR



2nd Put-in at pool under RR Bridge

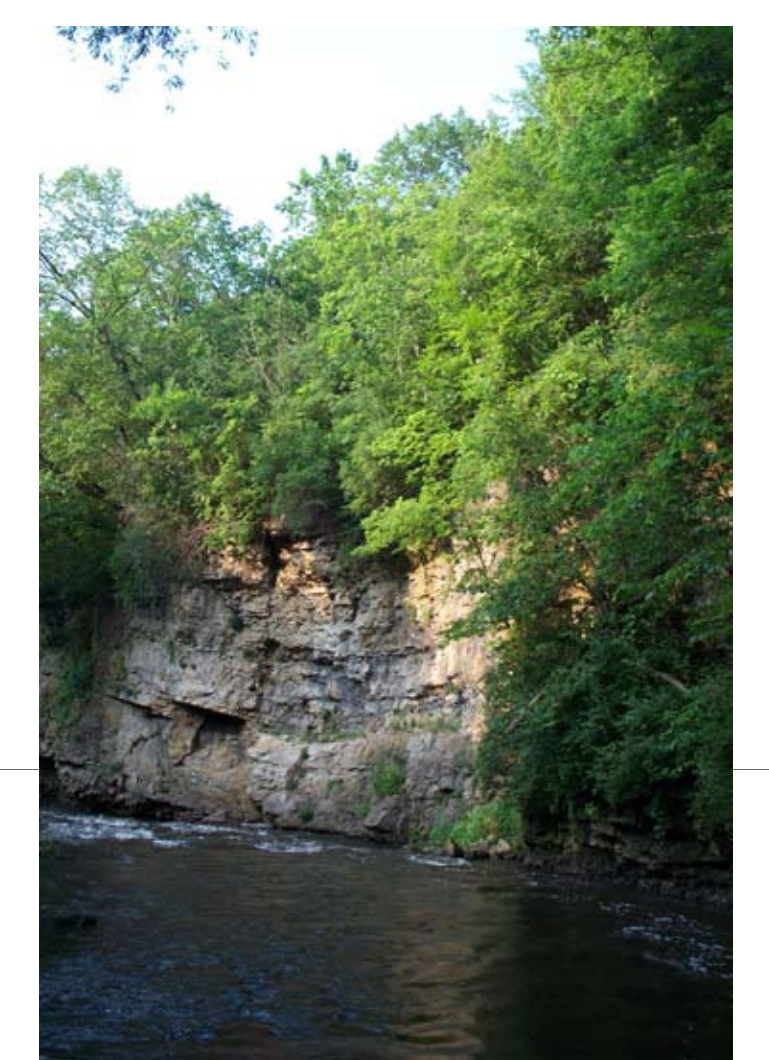
Old Mill Ruin



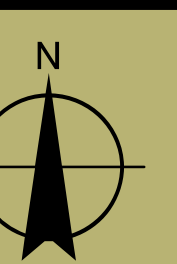
Old Mill Park

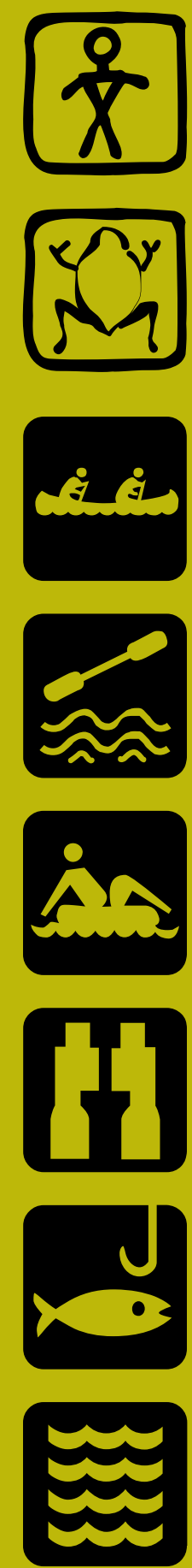


Old Mill Ruin take-out



Gorge wall at Old Mill Ruin take-out



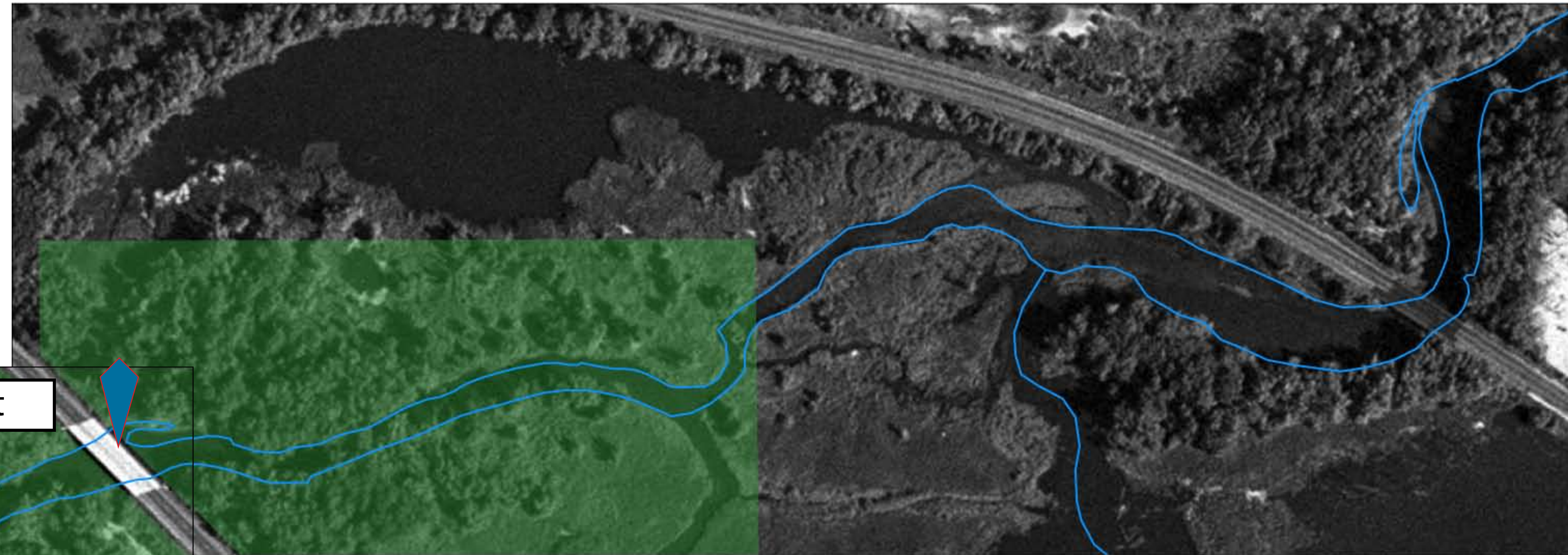
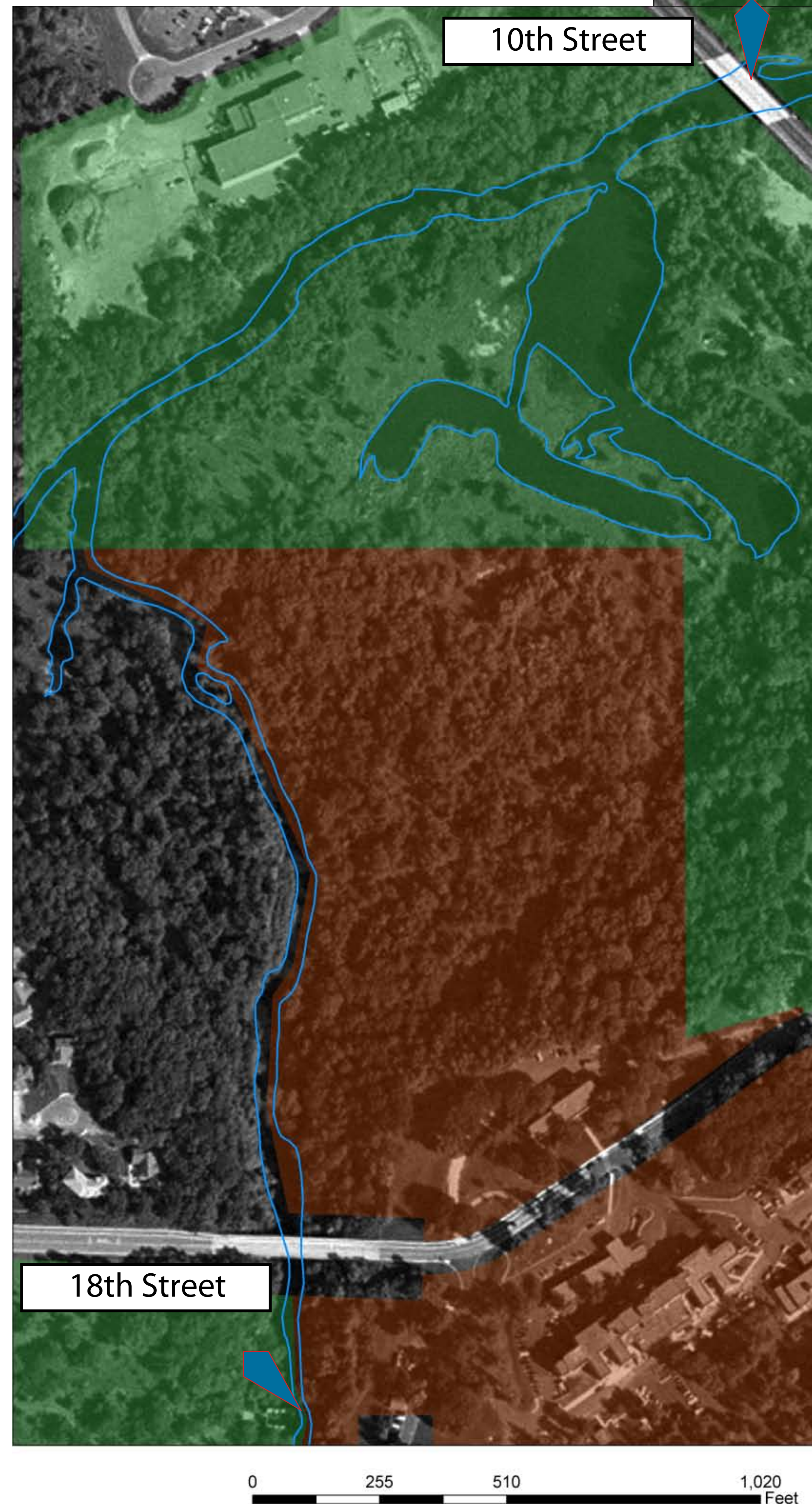
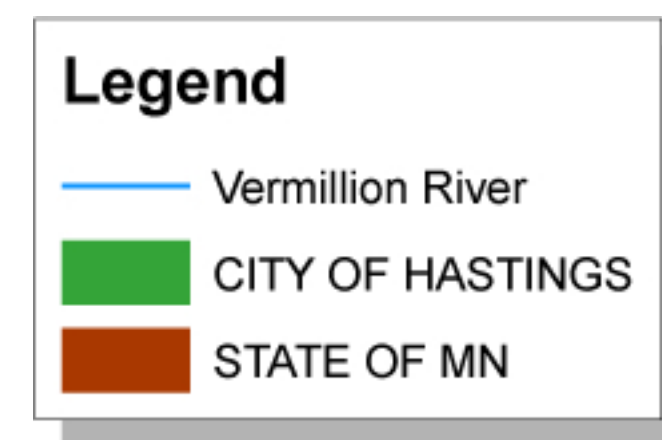


protect

educate

recreate

INVENTORY ANALYSIS LOCAL - MILL RUIN TO SLOUGH



Flat wetland complex

Moderate stream flow with varying channel depths between two feet and 6 inches (July 2005)

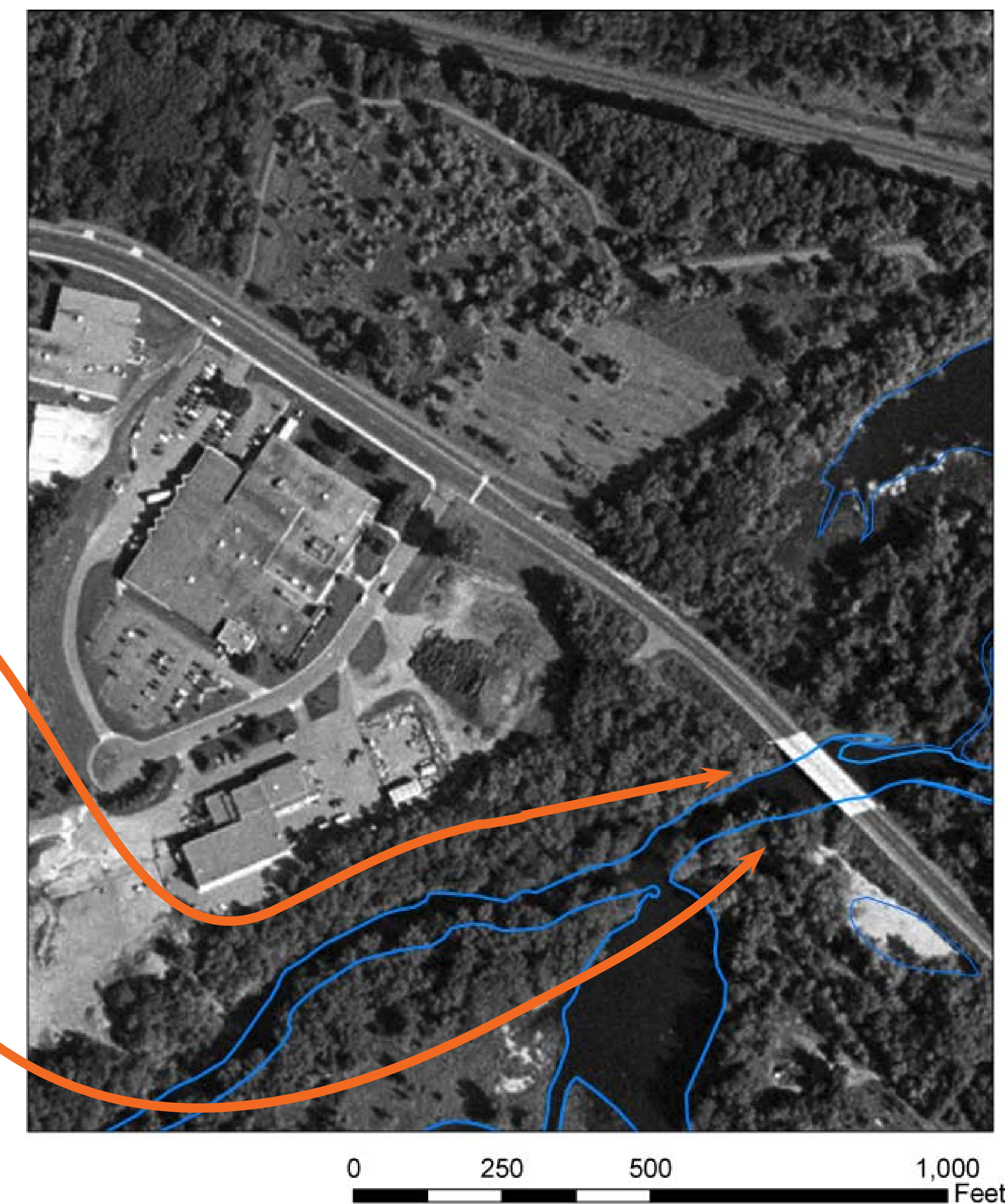
Sandy bottom along most of the channel, silt/ sand bed in most stretches beyond rail-road, walkable if needed

Potential canoe landing at 10th street lift station

Most adjacent land is owned by city as park land

Opportunity to connect bike trail with canoe trail at landing

Old Mill Ruin to 10th St.
5054 feet



Hastings Public Works, Lift station and potential canoe landing at 10th street

Vermillion River Water Trail

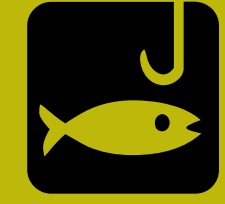
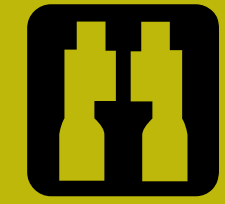
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
9





protect

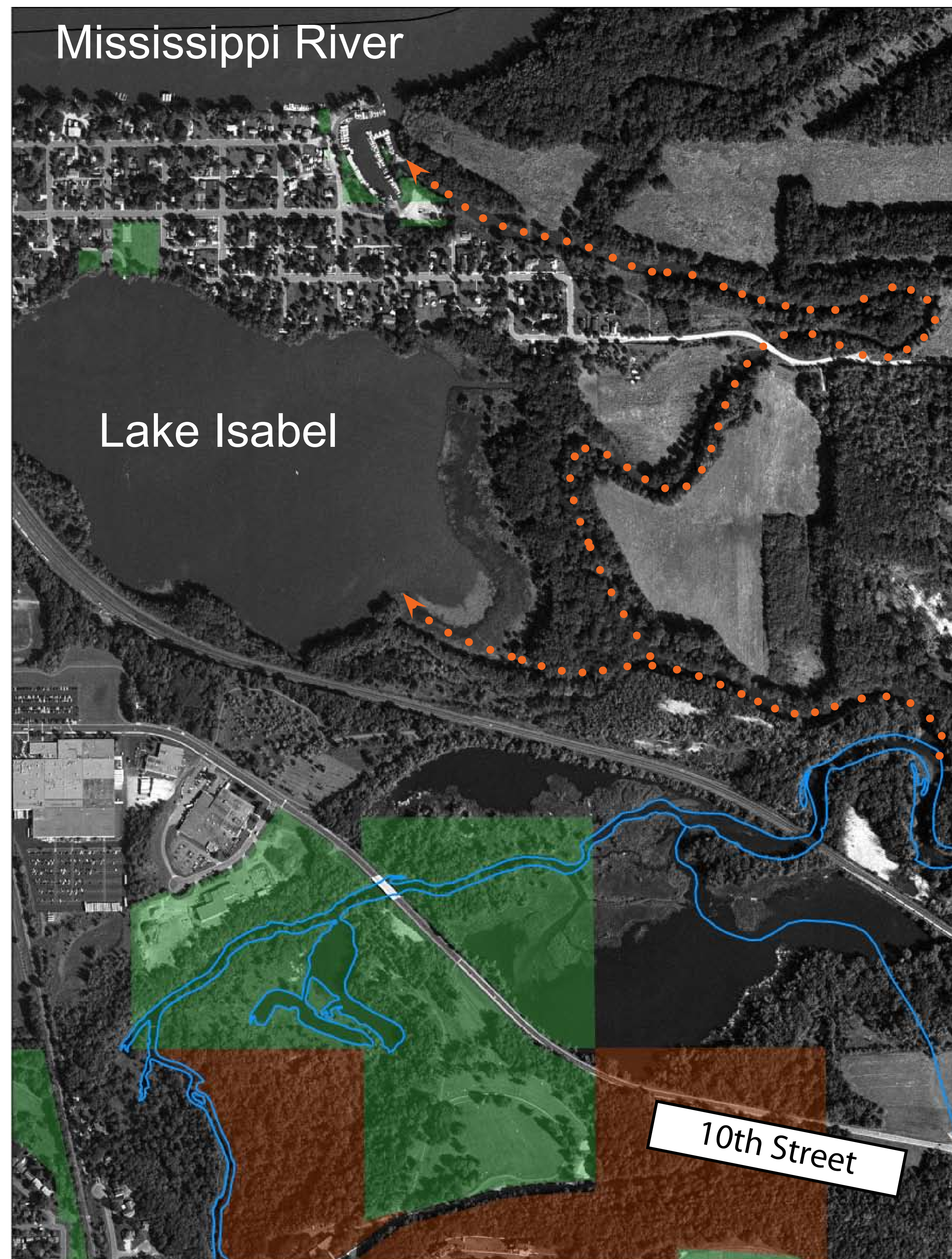
educate

recreate



Boat landing and city park on northern shore of Lake Isabel

Beyond 10th street, the sloughs offer potential canoe routes connecting several existing assets: Lake Isabel, Lk. Isabel boat ramp, Hastings Marina and the Mississippi and St. Croix Rivers.



- Legend**
- Vermillion River
 - CITY OF HASTINGS
 - STATE OF MN

Alternate northern trail connecting with Lake Isabel and the Mississippi River

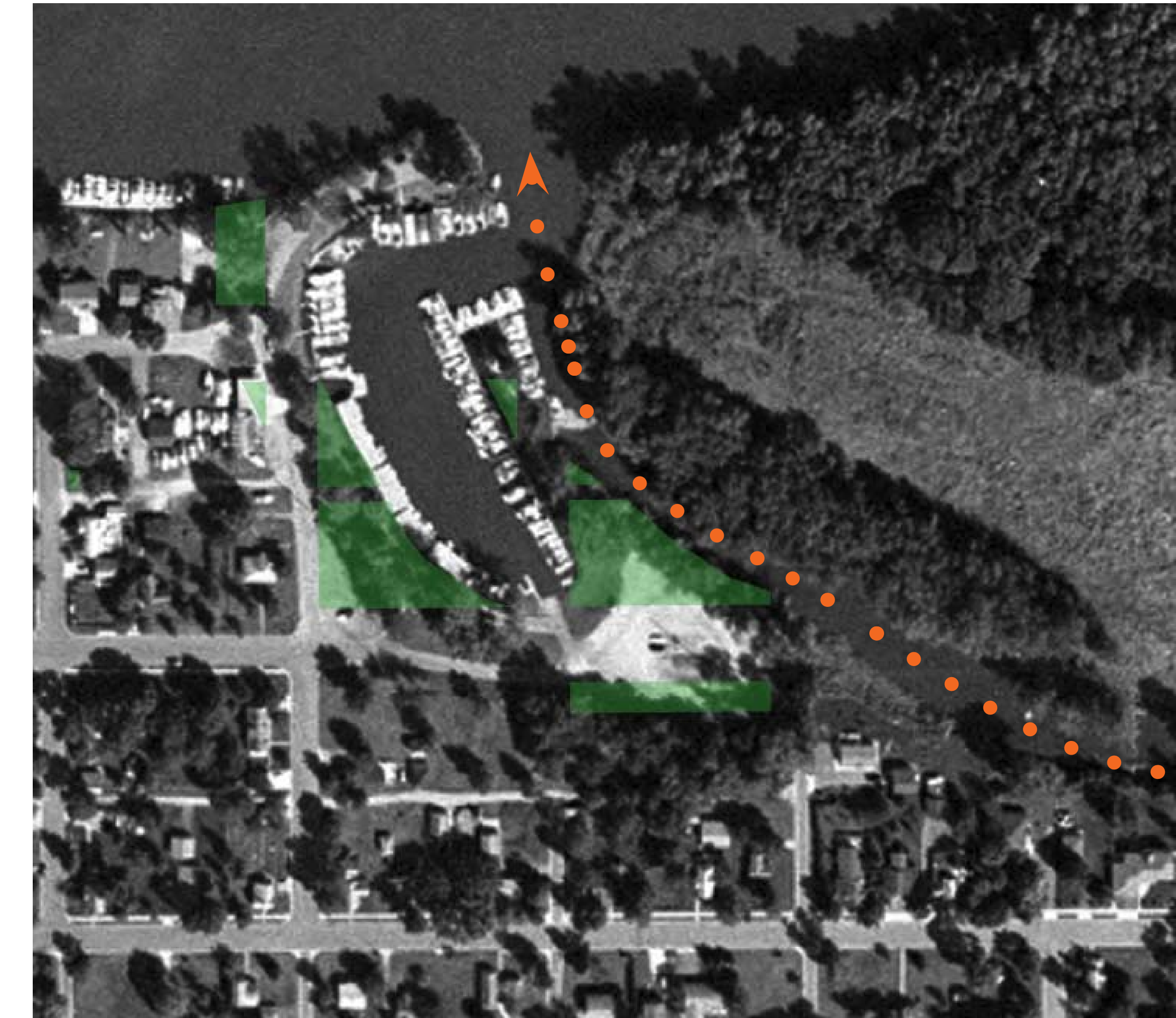


Fallen trees obstructing passage near SE portion of Lake Isabel

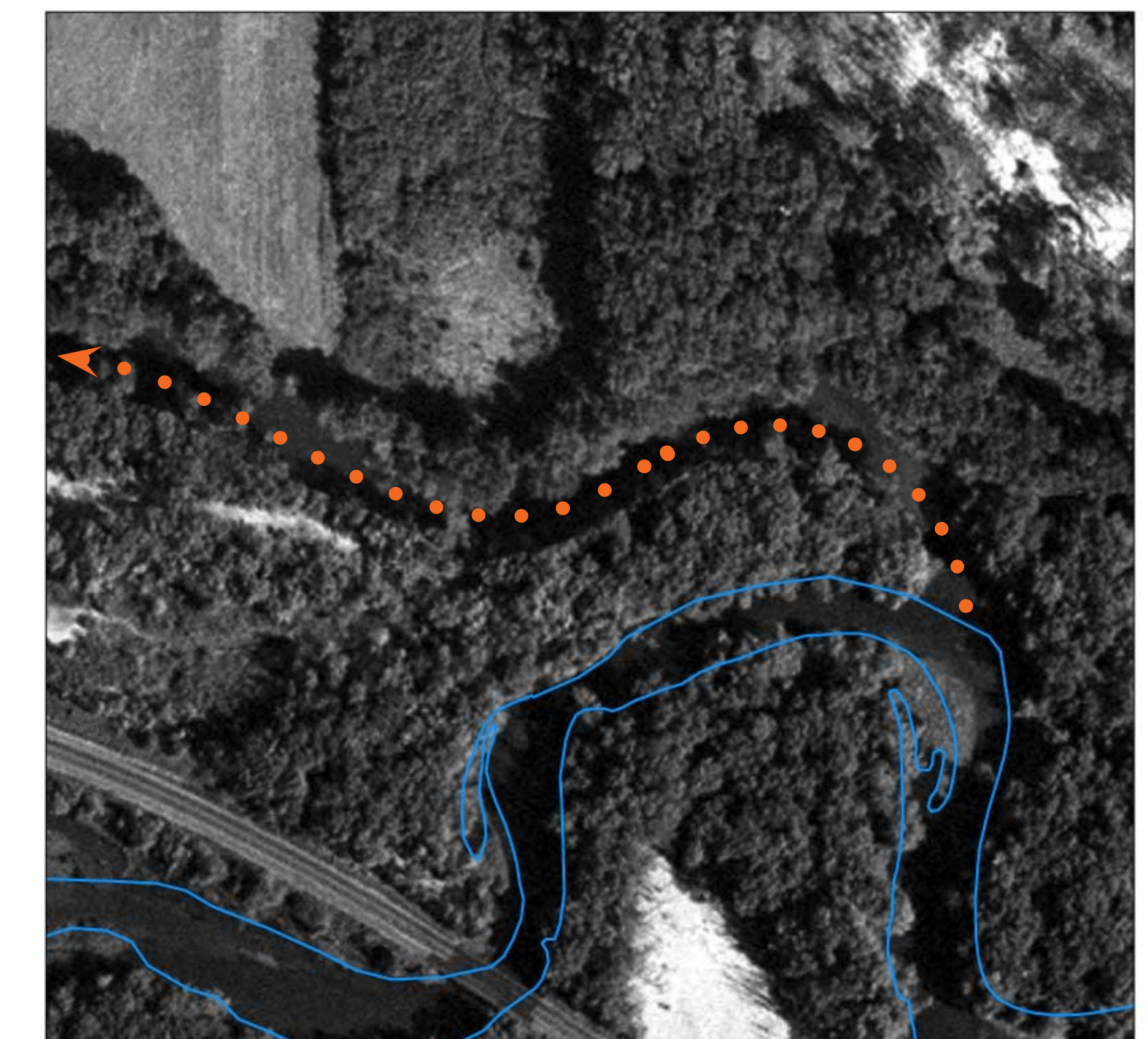
Trail choice to the Mississippi River, one trail meanders north for approximately two miles; the other travels south for more than 5 miles

North trail has potential to connect to Lake Isabel and marina on the Mississippi and thus the Mississippi and St. Croix Canoe Trails

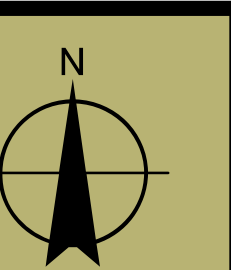
INVENTORY ANALYSIS LOCAL - SLOUGHS

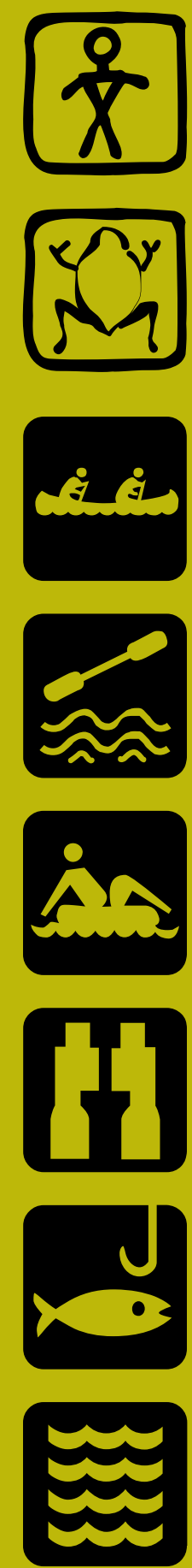


Marina on Mississippi River, access to Vermillion River



Water trail split to the Mississippi River, one south, one north

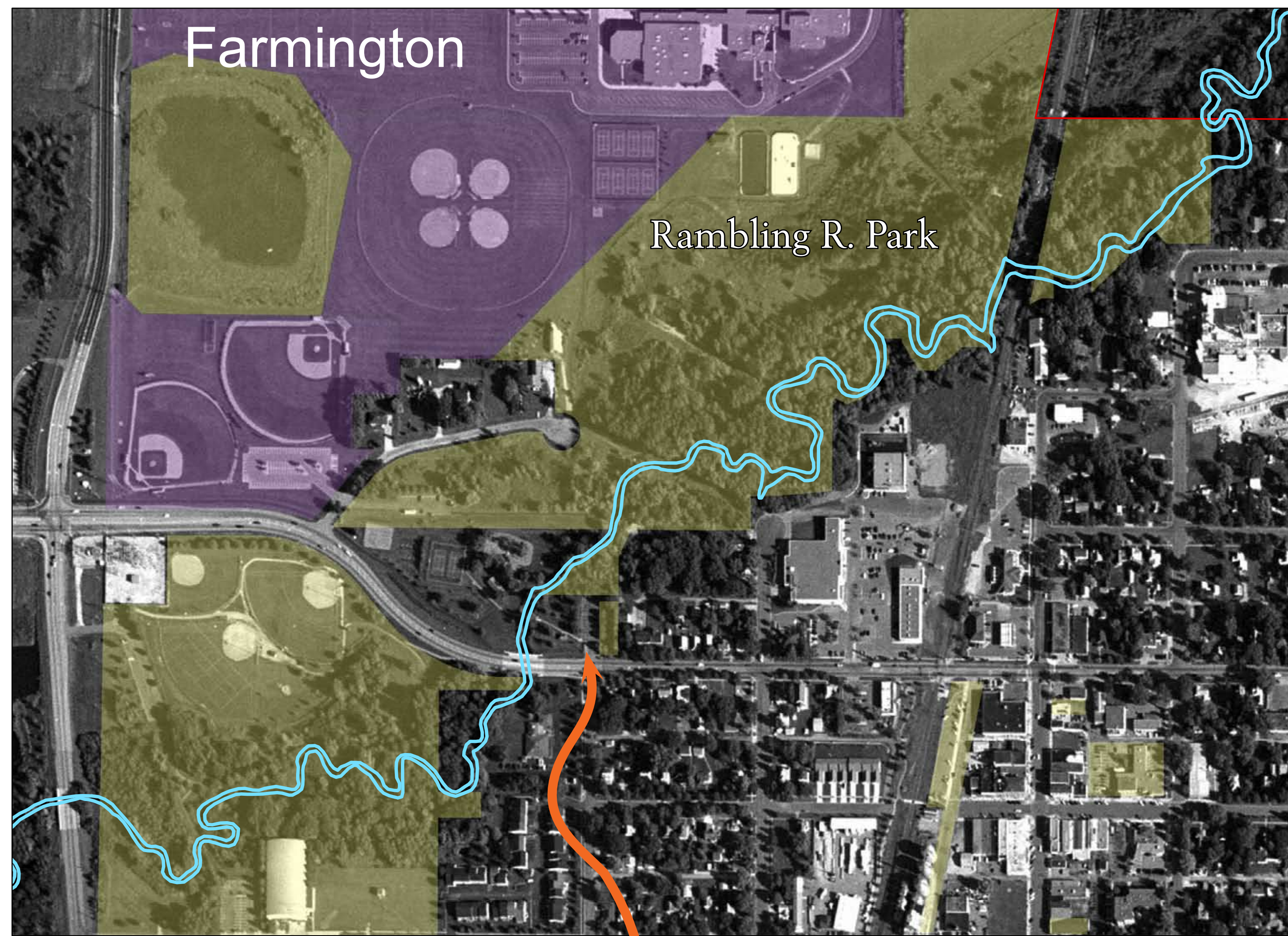




protect

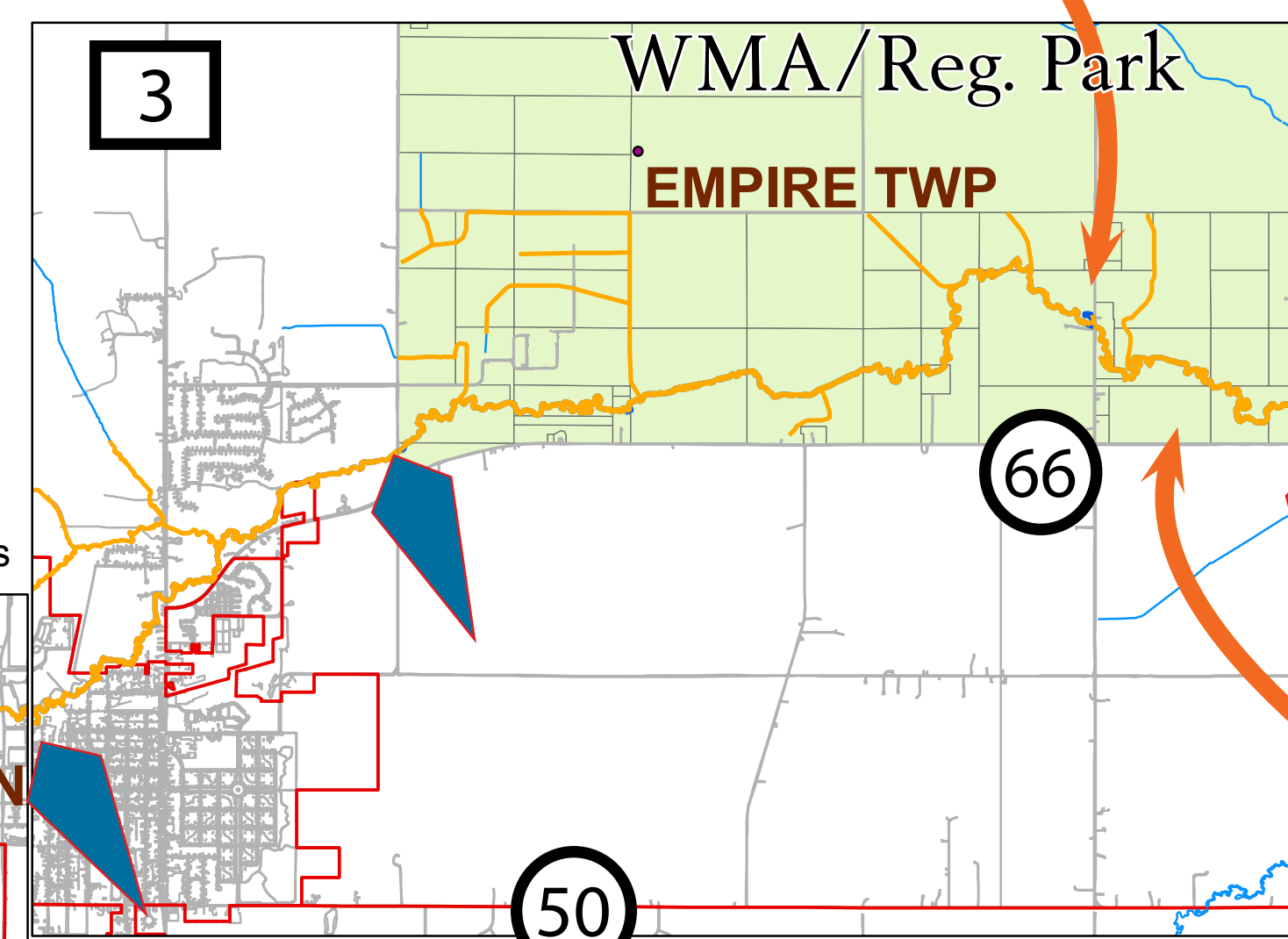
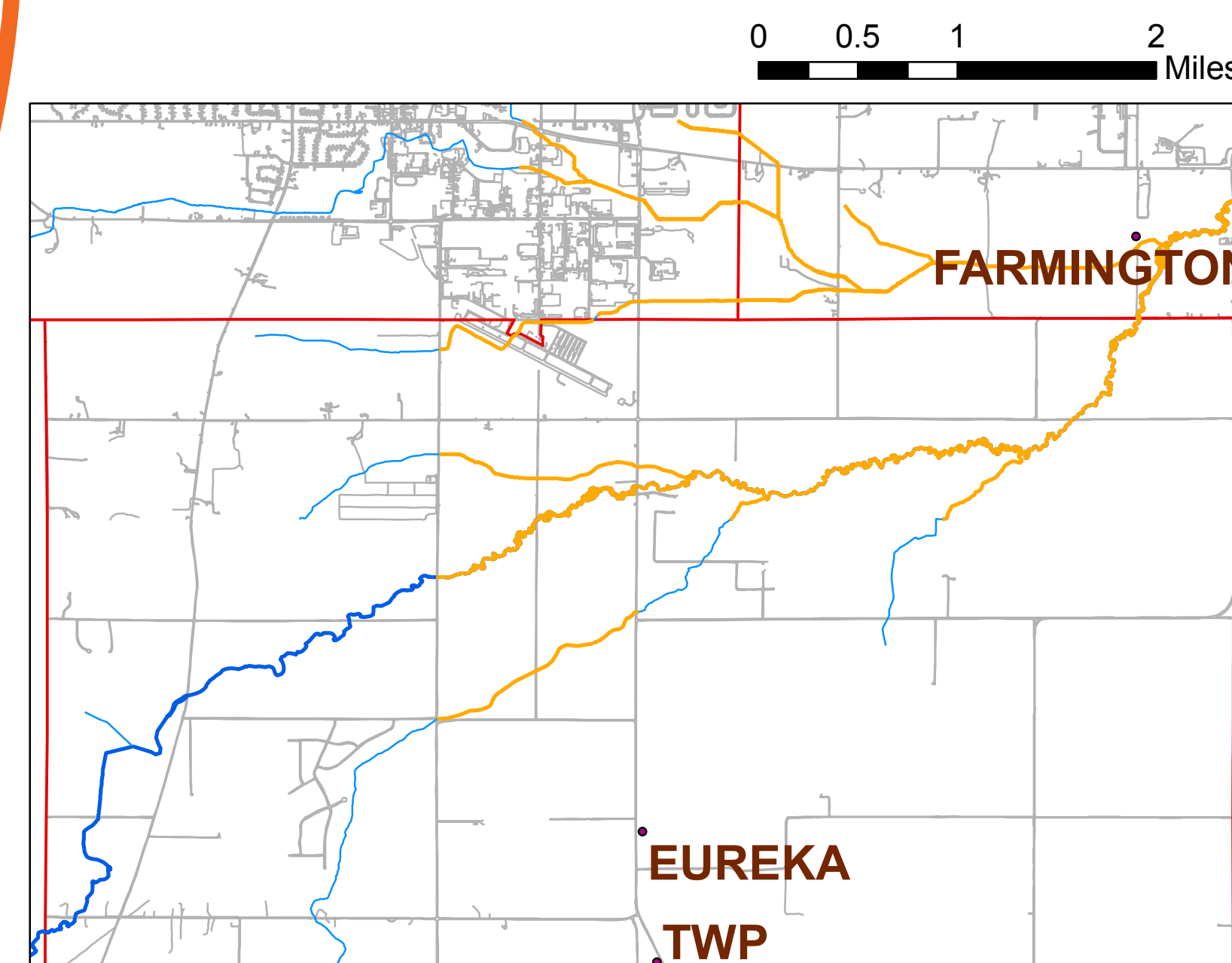
educate

recreate



- Legend**
- Municiple Bdry
 - Vermillion River
 - DNR Trout stream
- FmngtnPublicParcel**
- CITY OF FARMINGTON
 - IND SCHOOL DIST 192
 - RegPark/WMA Concept

0 365 730 1,460 Feet



1st segment - 4 miles

2nd segment - 7.33 miles

PROPOSED CANOE TRAIL - FARMINGTON TO EMPIRE

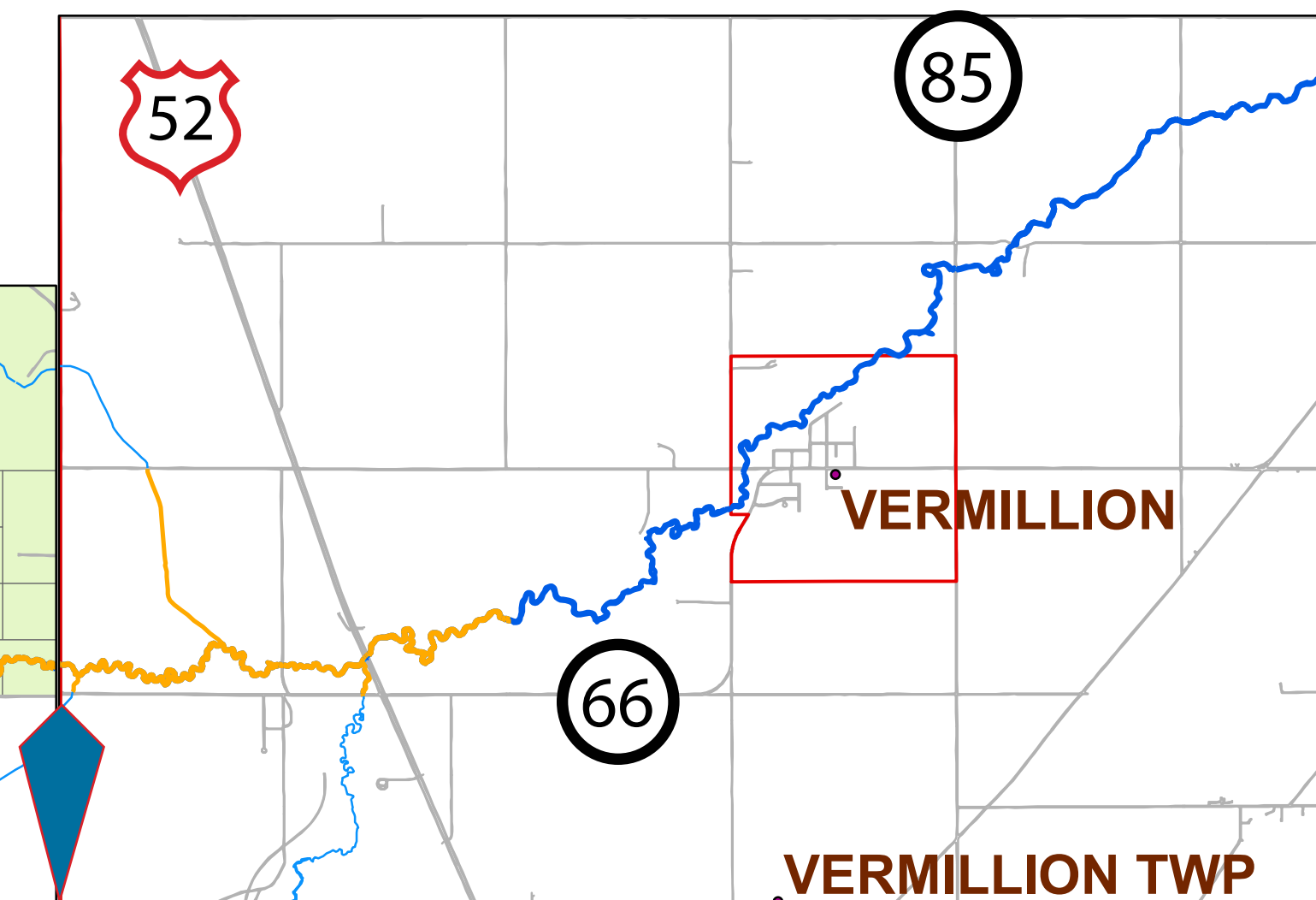
Vermillion River at Empire monitoring station



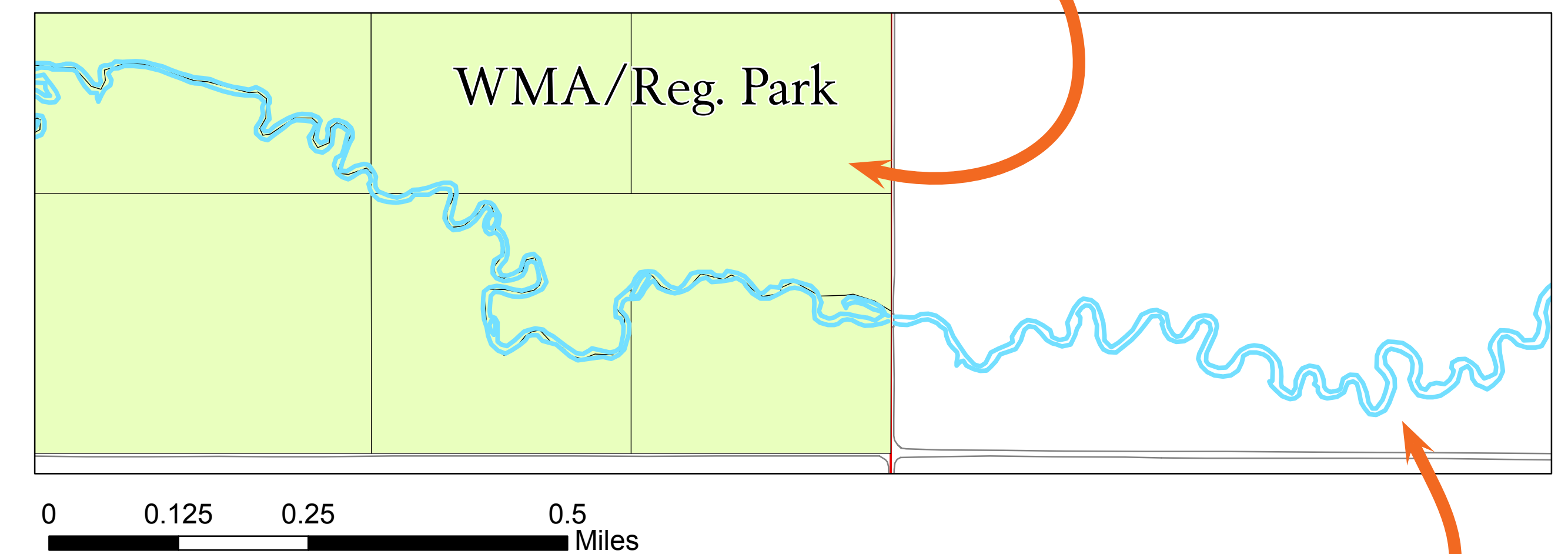
Upstream



Downstream



Proposed Empire WMA and Regional Park



Prairie River, open Grass-
land in Western Vermillion
Twp.



Start here: Farmington's Rambling River
Park



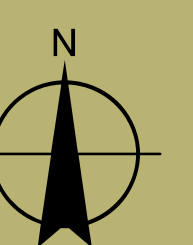
Vermillion River Water Trail

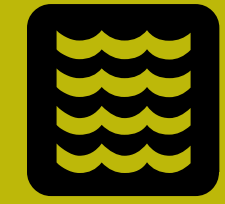
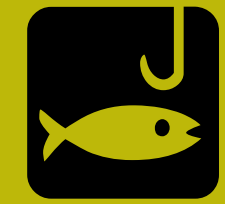
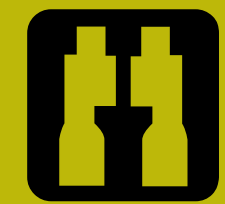
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
11

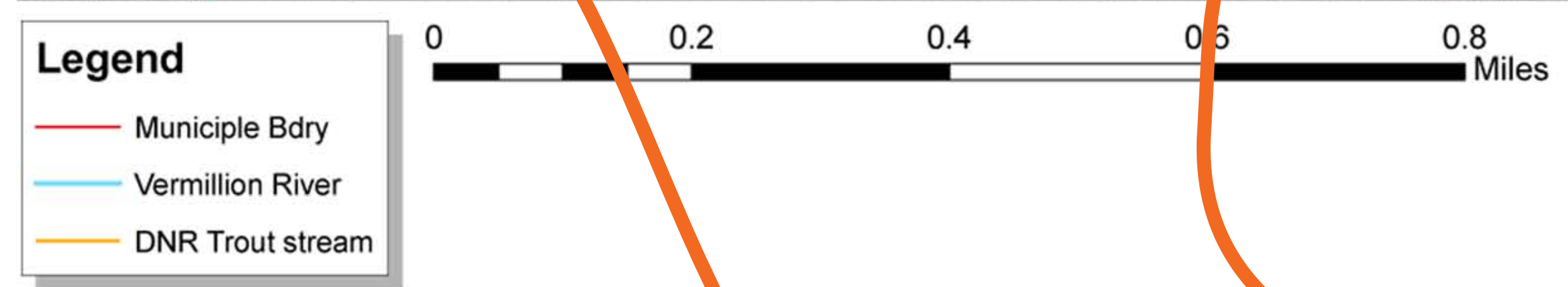
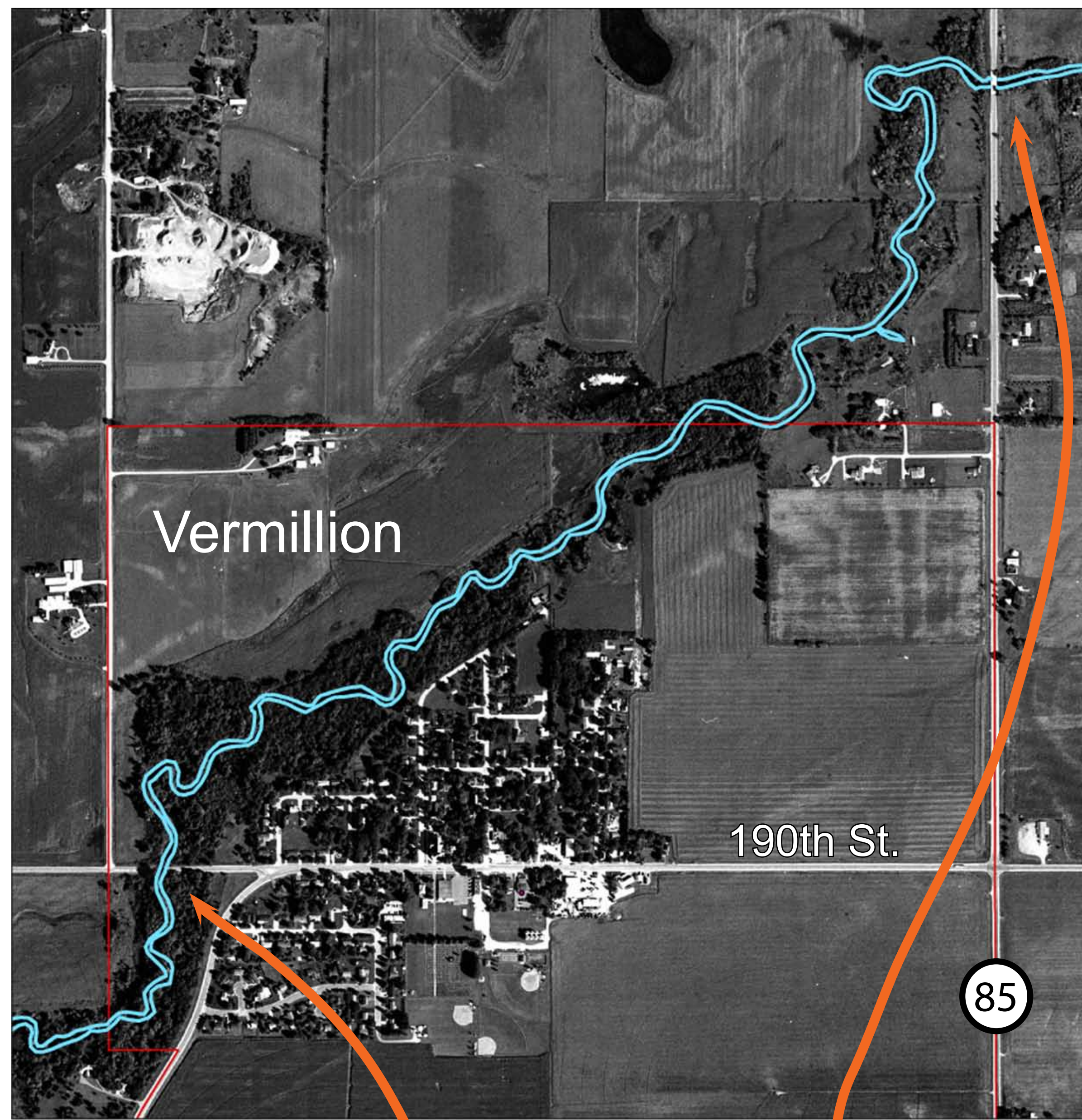




protect

educate

recreate



Downstream from county 85



Upstream from county 85

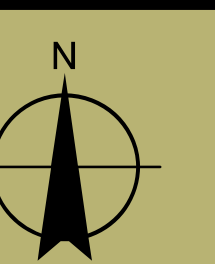
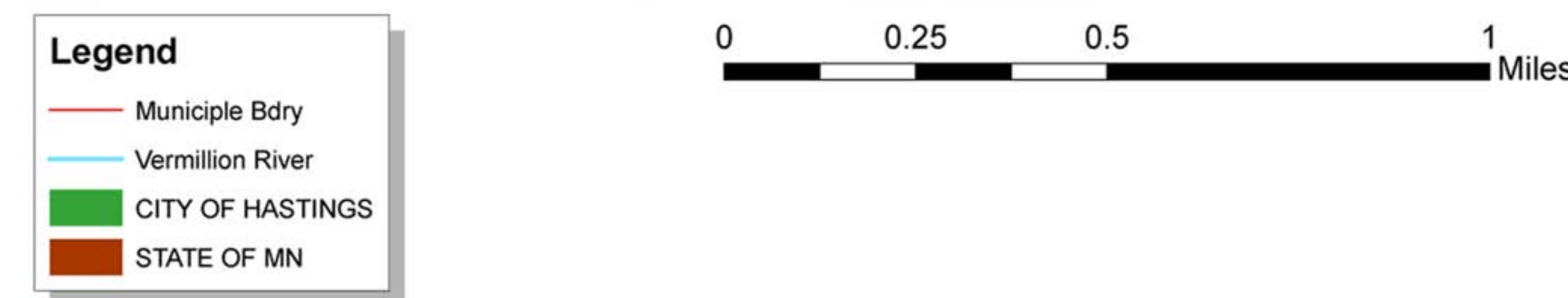
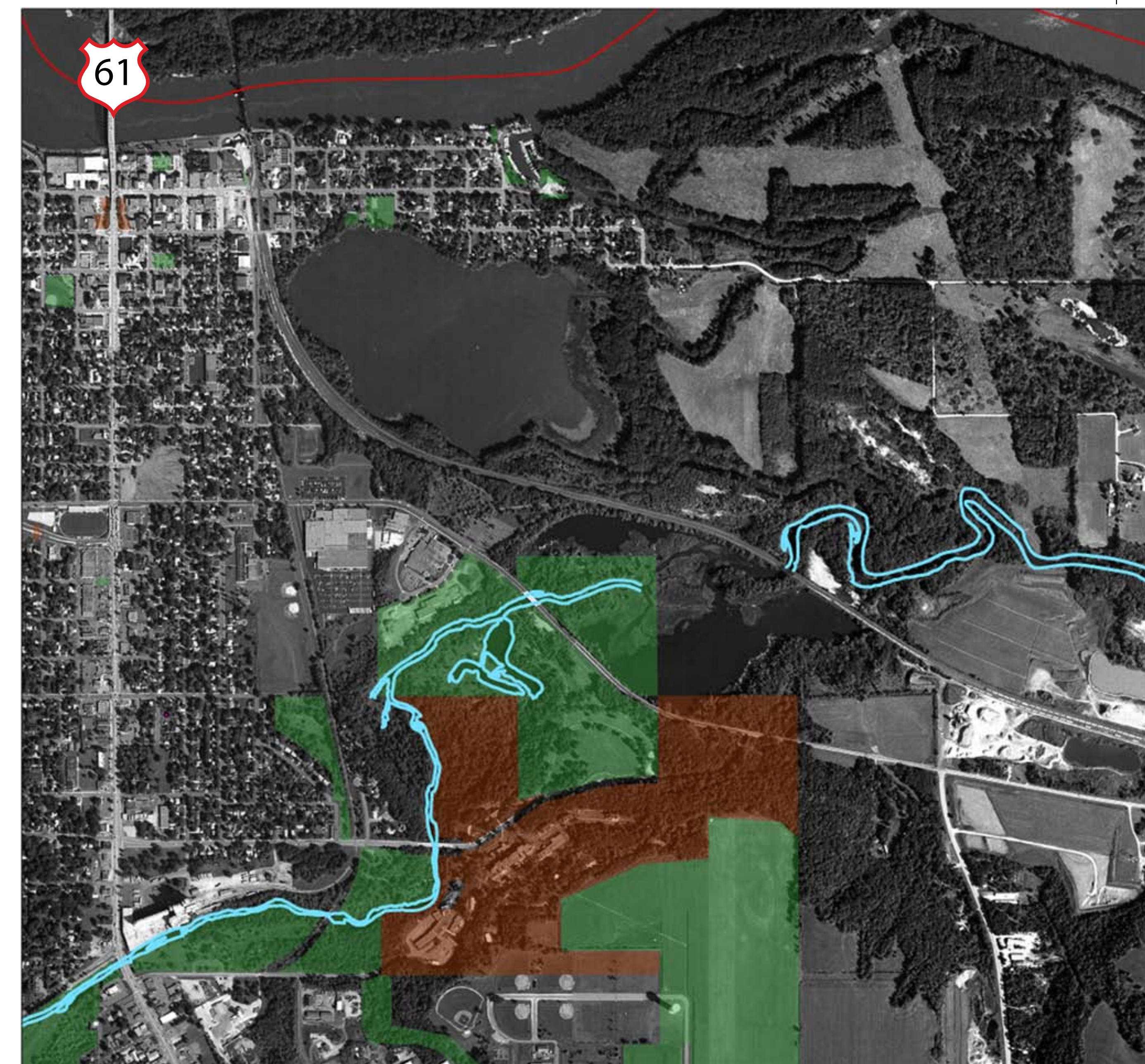
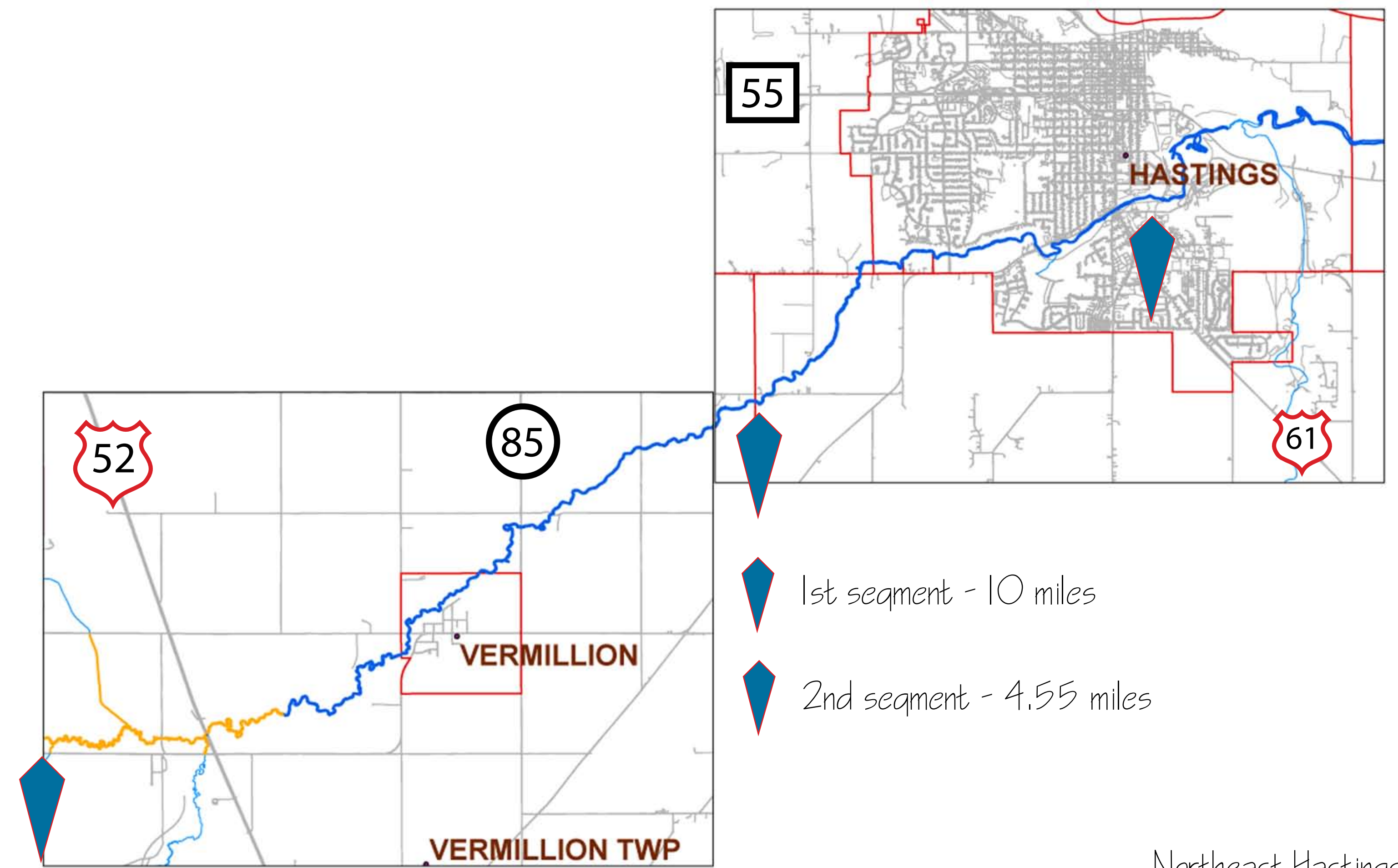
Ownership along the Vermillion River in Vermillion township is all private, two exceptions would be the Right-of-Ways along County roads 85 and 62 (or 190th street.)

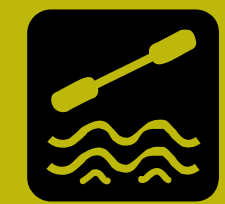
Providing a municiple park in Vermillion would create a controlled access for canoeists and other users of the river, until then, the right-of-way access would suffice.

Hastings' Park sustem is extensive of-fering a natural fit for canoe and kayak trails potentially increasing recreation, tourism and associated economic ben-efits.

Portage required before falls and around qorqe, resume trail at Old Mill Park.

PROPOSED CANOE TRAIL- VERMILLION TO HASTINGS



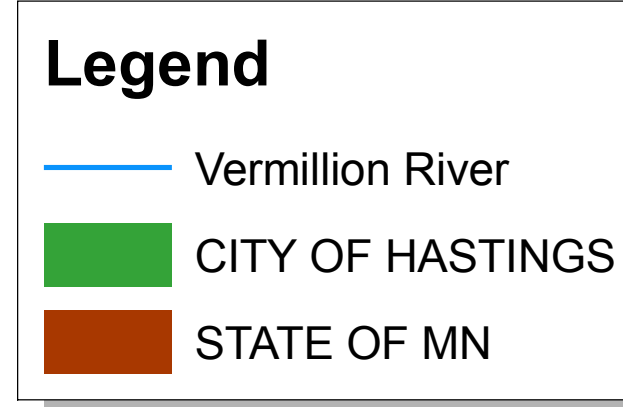


protect

educate

recreate

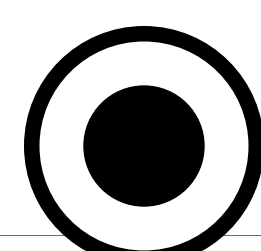
PROPOSED KAYAK TRAIL - GORGE



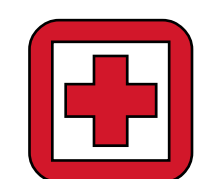
The 2/3 mile stretch through the gorge provides a series of class II and III rapids for kayakers. Three locations and access trails will provide put-in and take-out points for kayaking. Five locations for safety and rescue access will provide anchoring stations and/or trails for rescue equipment.



Kayak Trailhead



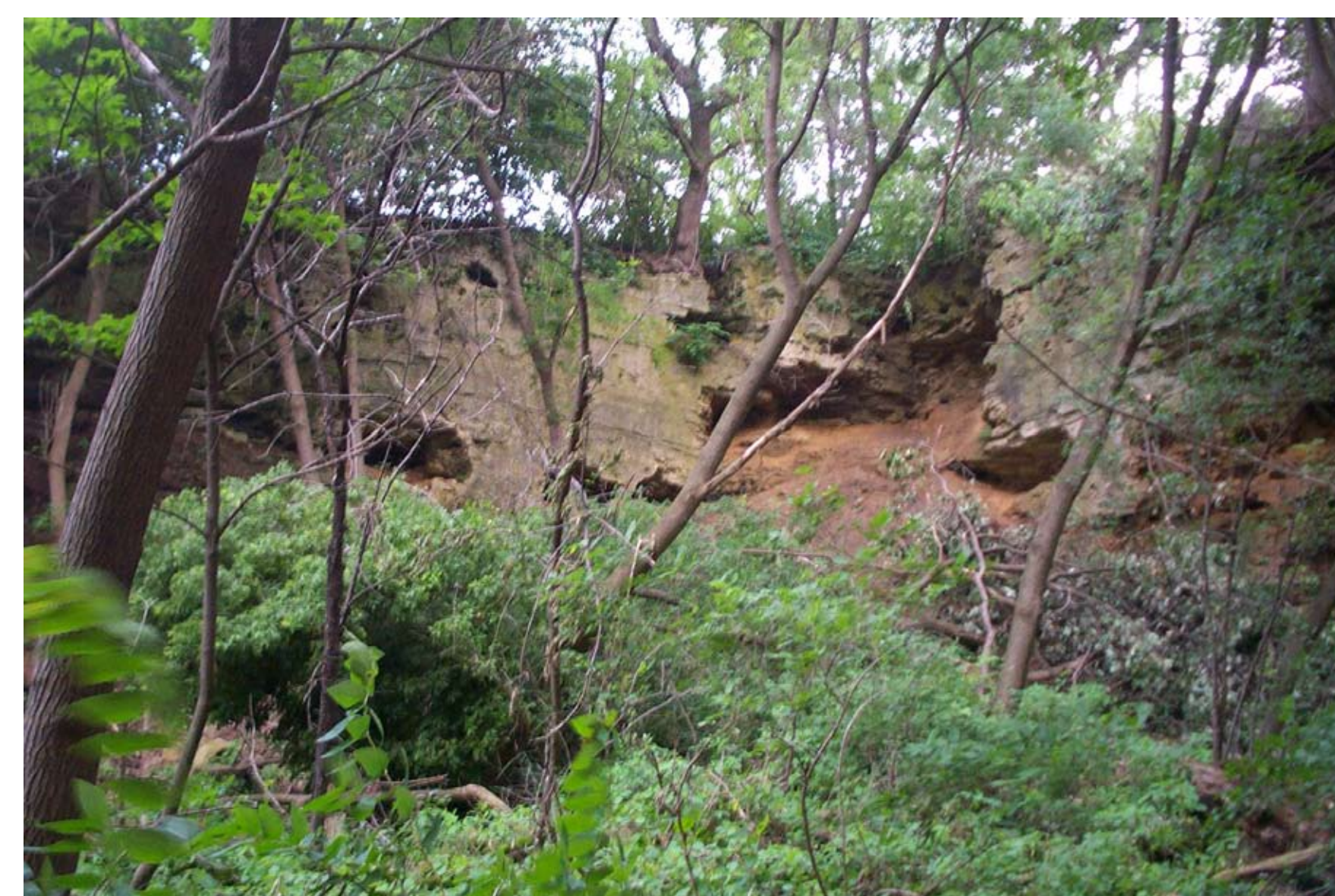
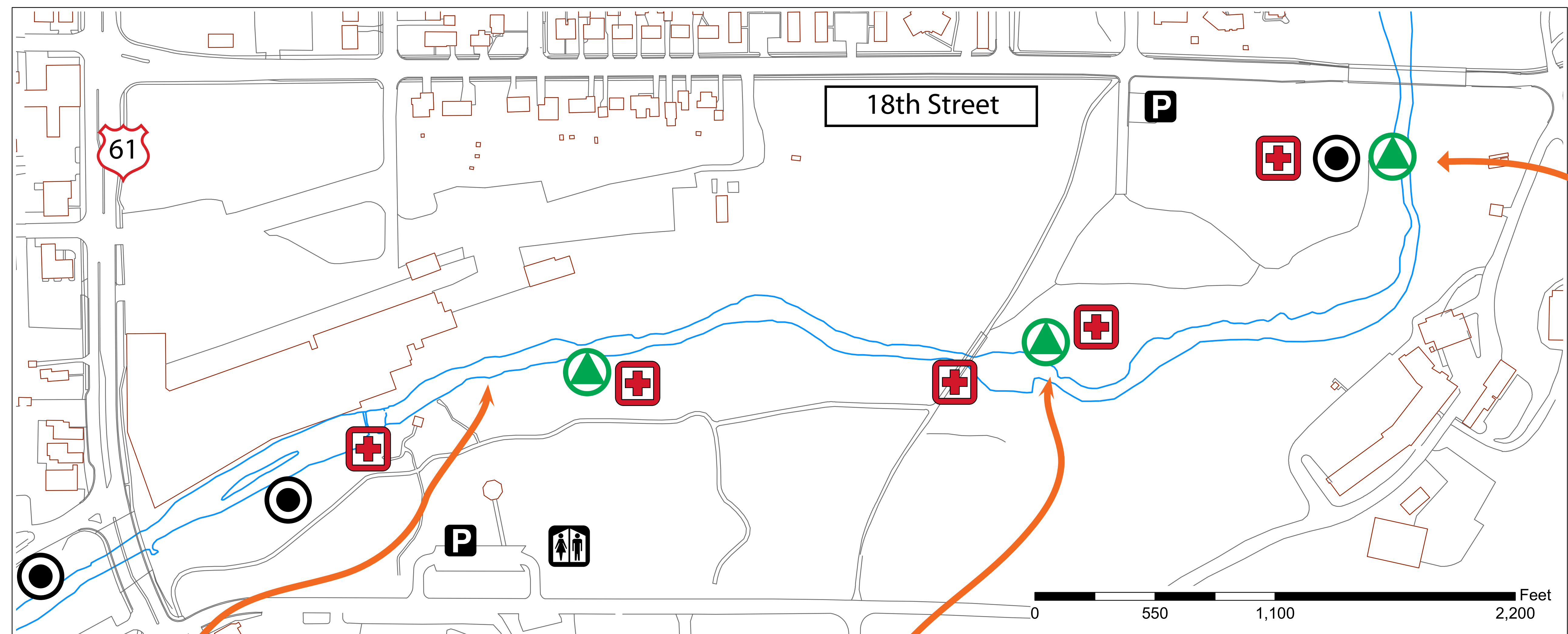
Canoe Trailhead



Rescue Access Point/ Anchor



Old Mill Ruin



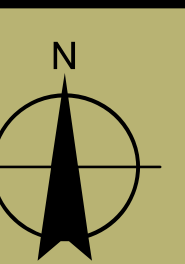
Steep gorge walls near the falls, although rigid stairs and paths may provide access.

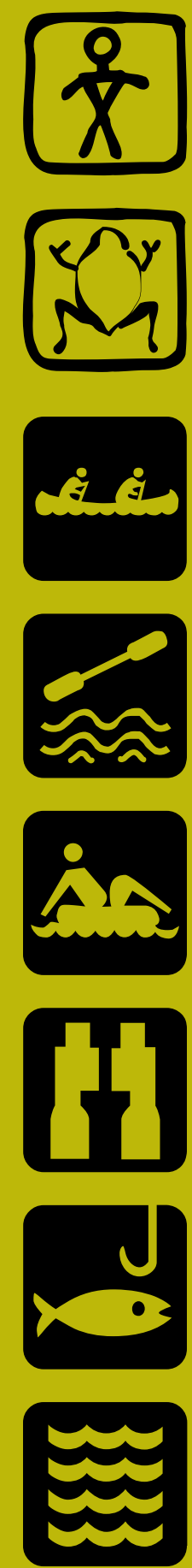


The pool below the railroad bridge path is a popular option for for a kayak trailhead.



Old Mill Ruin provides an opportunity for kayakers to exit (take-out) and canoeists to put-in. The trail-head would need to lead away from the ruin in a series of switchbacks leading across the slope between the river and Old Mill Park.



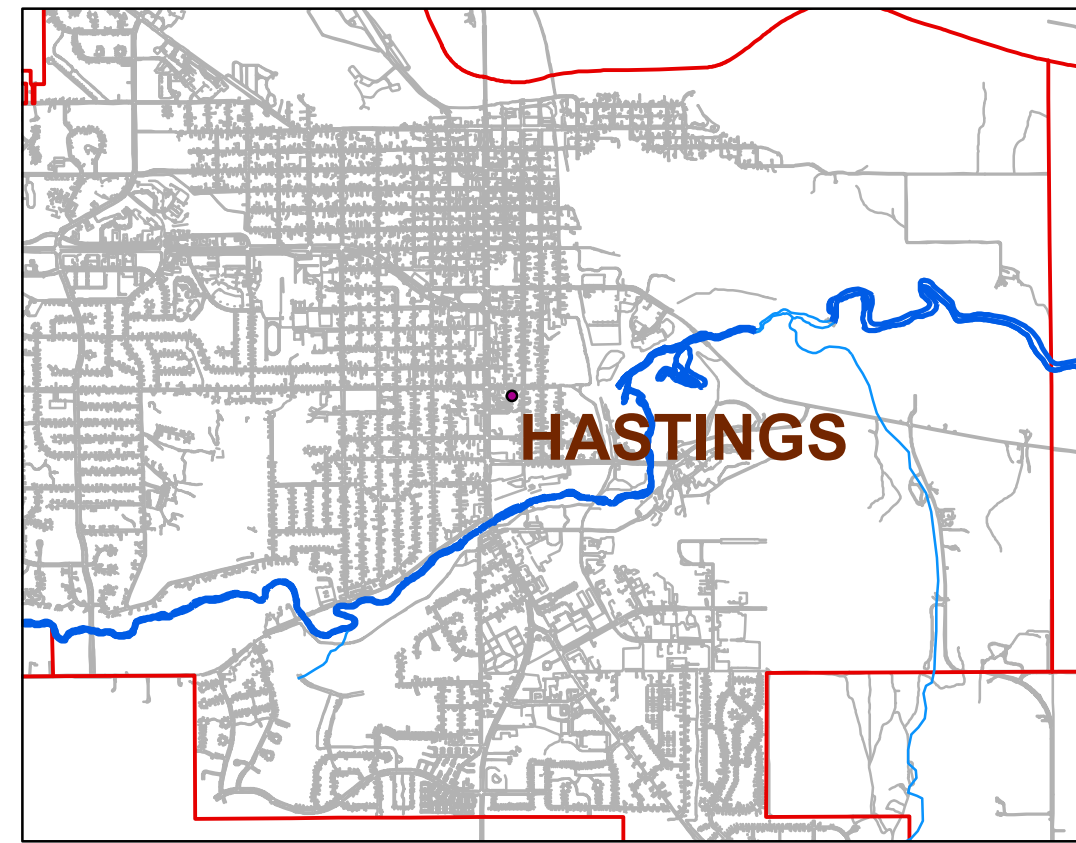


protect

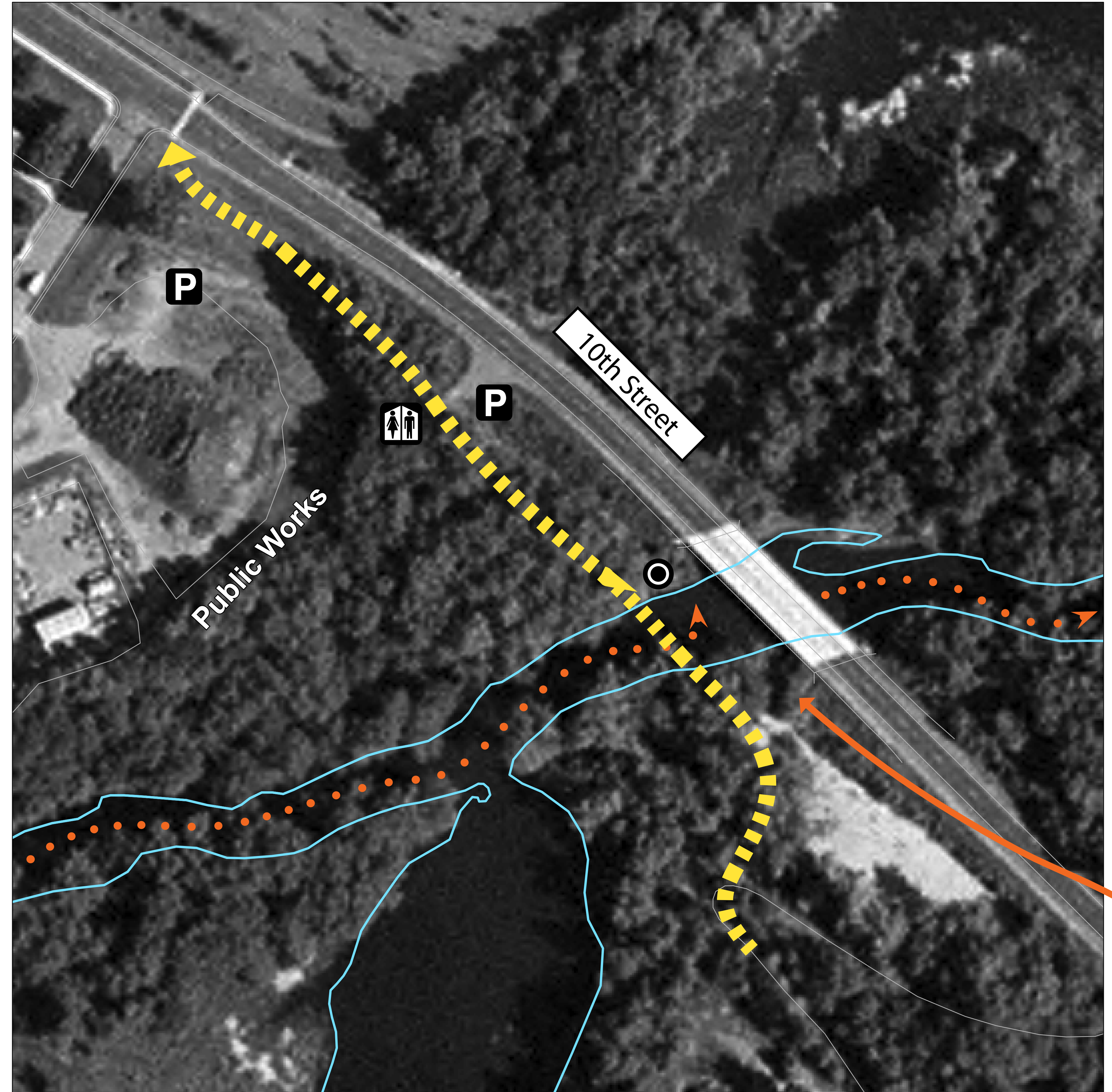
educate

recreate

PROPOSED CANOE TRAIL - 10TH STREET, HASTINGS



- Legend**
- Municiple Bdry
 - Vermillion River
 - Roads
 - CITY OF HASTINGS
 - STATE OF MN



0 187.5 375 750 Feet

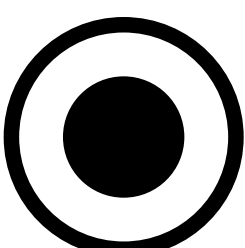
Existing Bike Trail



Restroom facilities for water and terrestrial trails



Parking at either Public Works or 10th Street Lift Station



Canoe Trailhead



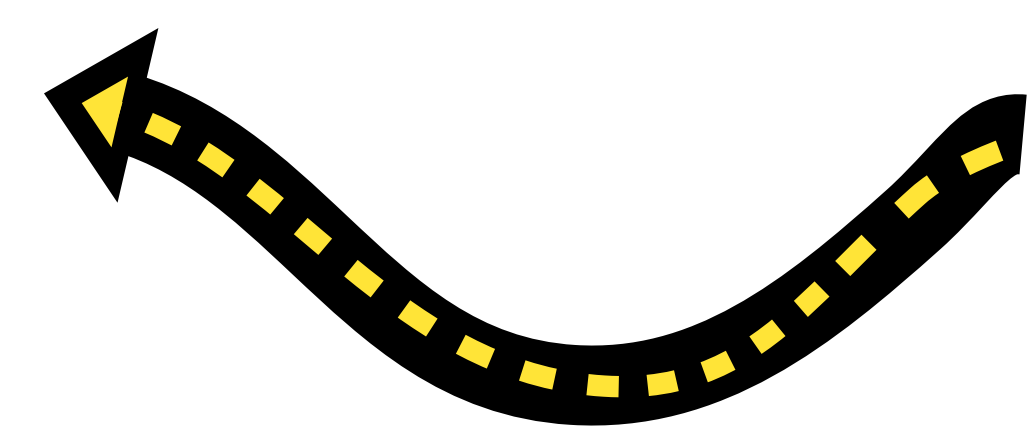
Rescue Access Point/ Anchor



Boat Launch for Rescue Access



Potential Canoe Trail



Re-aligned Bike Trail

The northwest intersection of the Vermillion River and 10th st provides an opportunity for a canoe trailhead. Parking could be located at either the Public Works facilities or the lift station on 10th st. Additionally, re-alignment of the existing bike trail from CP Adams Park would pull the bike path from roadside and into the trailhead area. Utilizing former rail bridge piers on the river to create an overpass for bicyclists and pedestrians brings together both terrestrial and water trail systems.

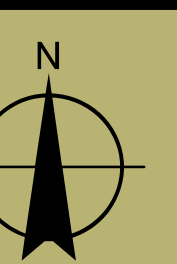
Vermillion River Water Trail

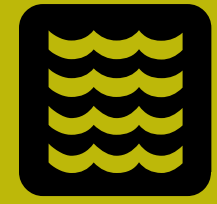
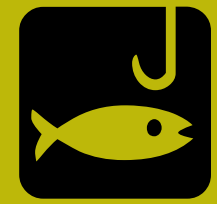
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
14





protect

educate

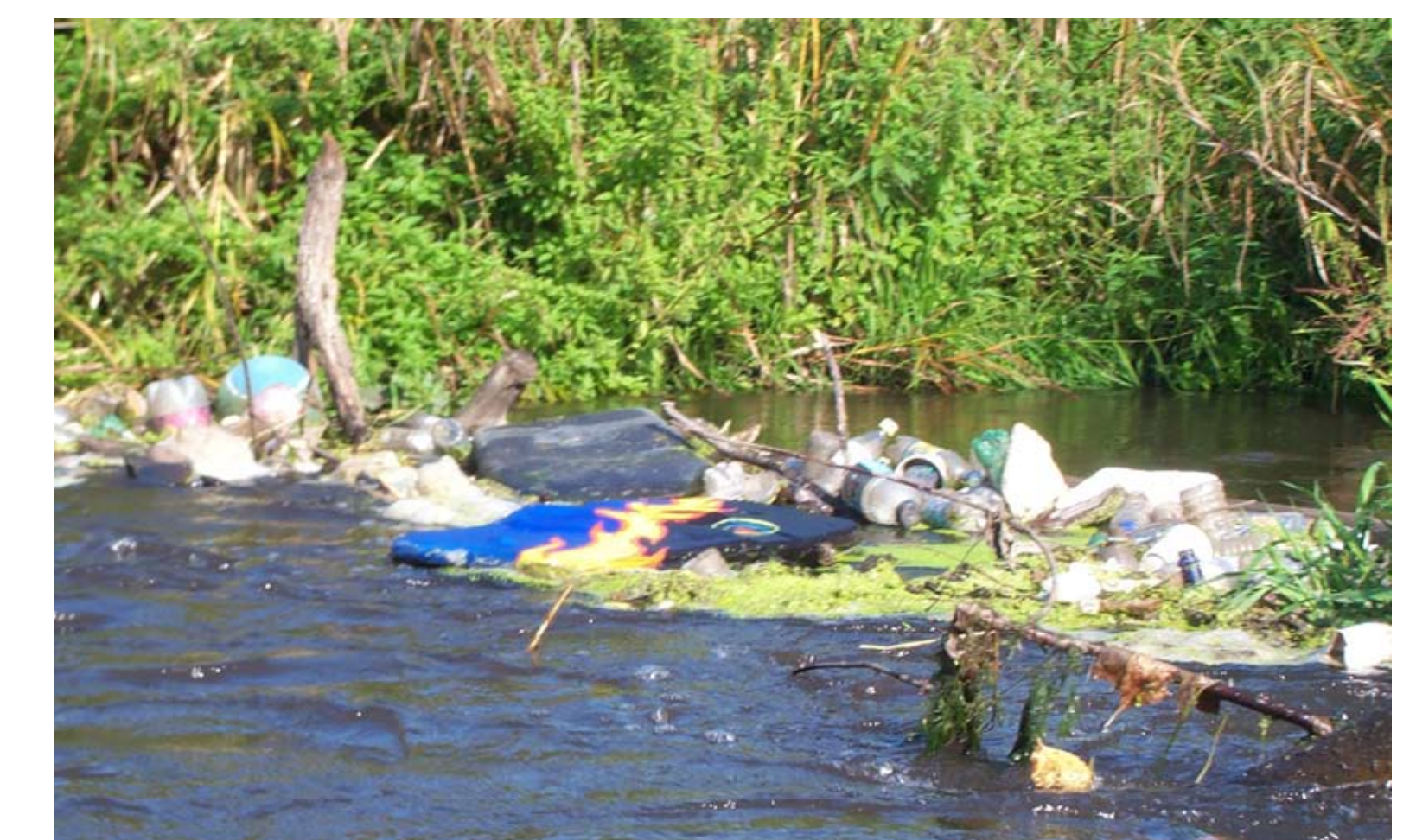
recreate

PROPOSED CANOE TRAIL - SOUTH TRAIL, HASTINGS TO RAVENNA TWP

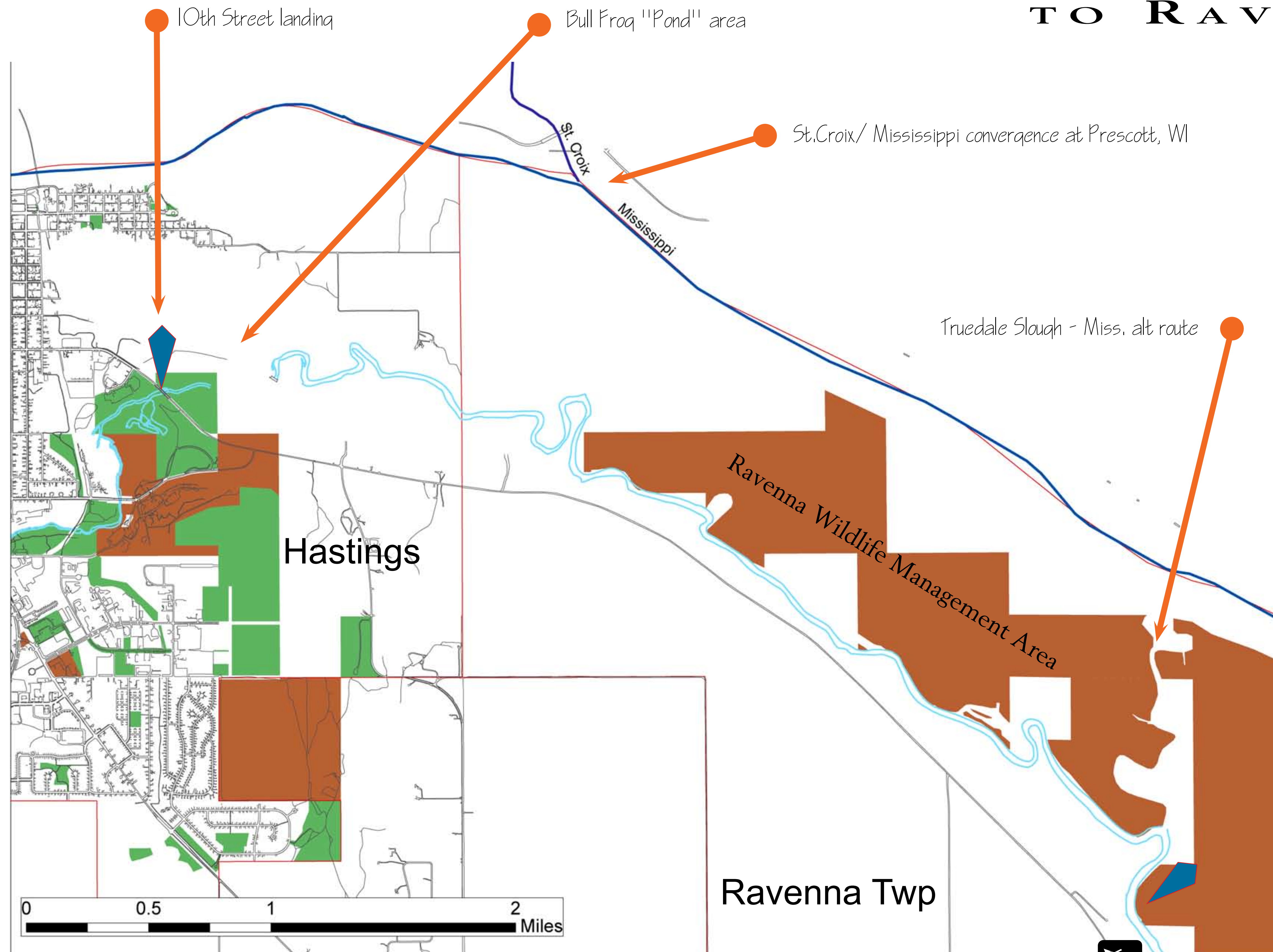
This portion of the river travels east and south from the 10th Street landing for approximately 6.7 miles until it reaches the MN DNR boat landing in Ravenna Twp. Most of the adjacent landscape is protected as the Ravenna Wildlife Management Area.

The river winds through natural openings of the Mississippi River floodplain. Water depths observed at the end of September ranged between a shallow 8 inches in the area of Bull Frog Pond to two feet plus in the center channel. The occasional snag requires portaging, however, most can be circumvented.

Initial funding would help open the channel- freeing the snags that obstruct passage, installing necessary signage to keep canoeists on the proper trail and a concerted effort to remove all of the debris. A stewardship plan to follow would provide routine clean-ups, conservation officer patrols, and another section of water that is managed at multiple levels in an on-going effort to clean our waterways.



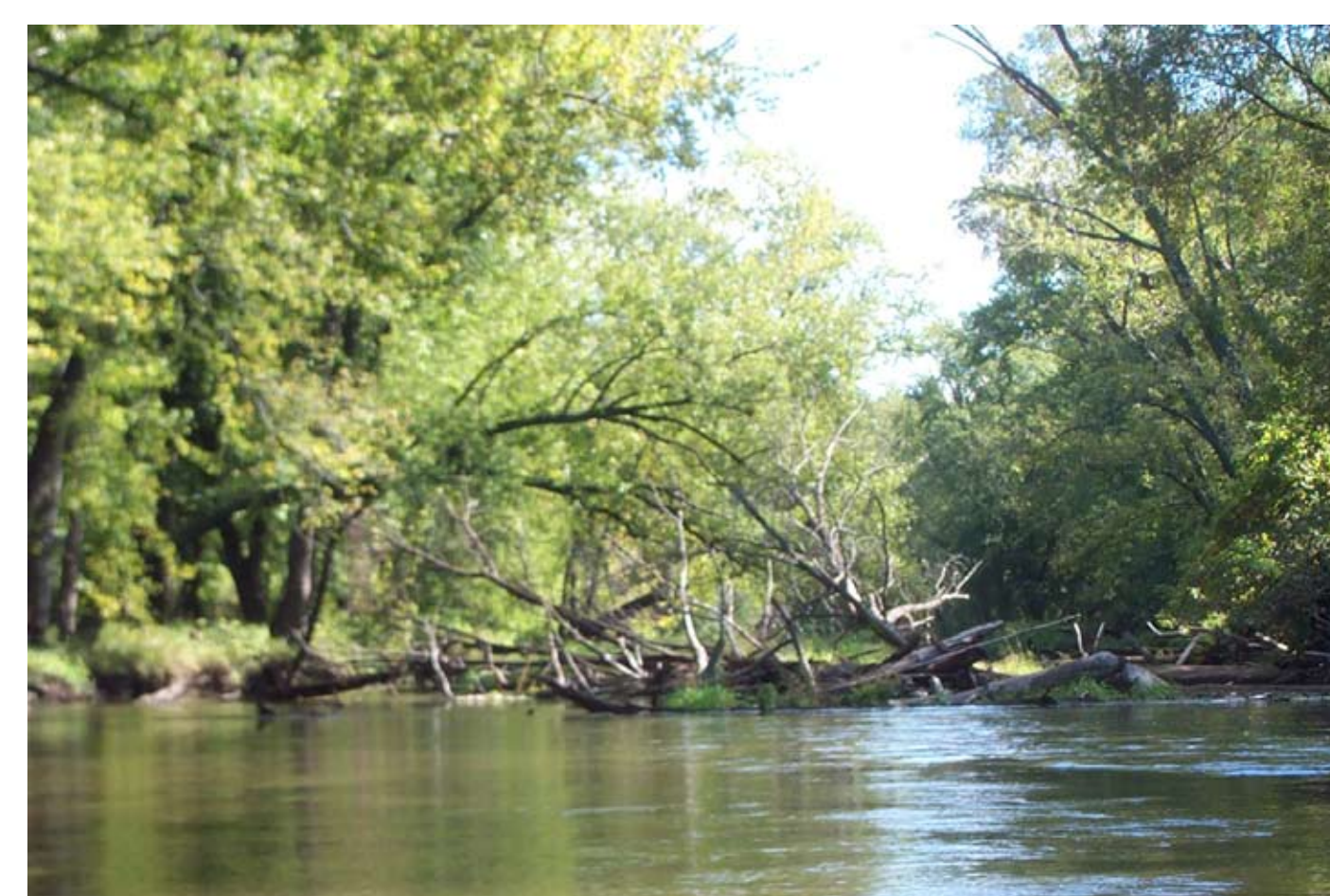
Debris collected on a snag in the Bull Frog Pond area



South Trail - 6.7 miles, 10th Street landing to DNR boat ramp



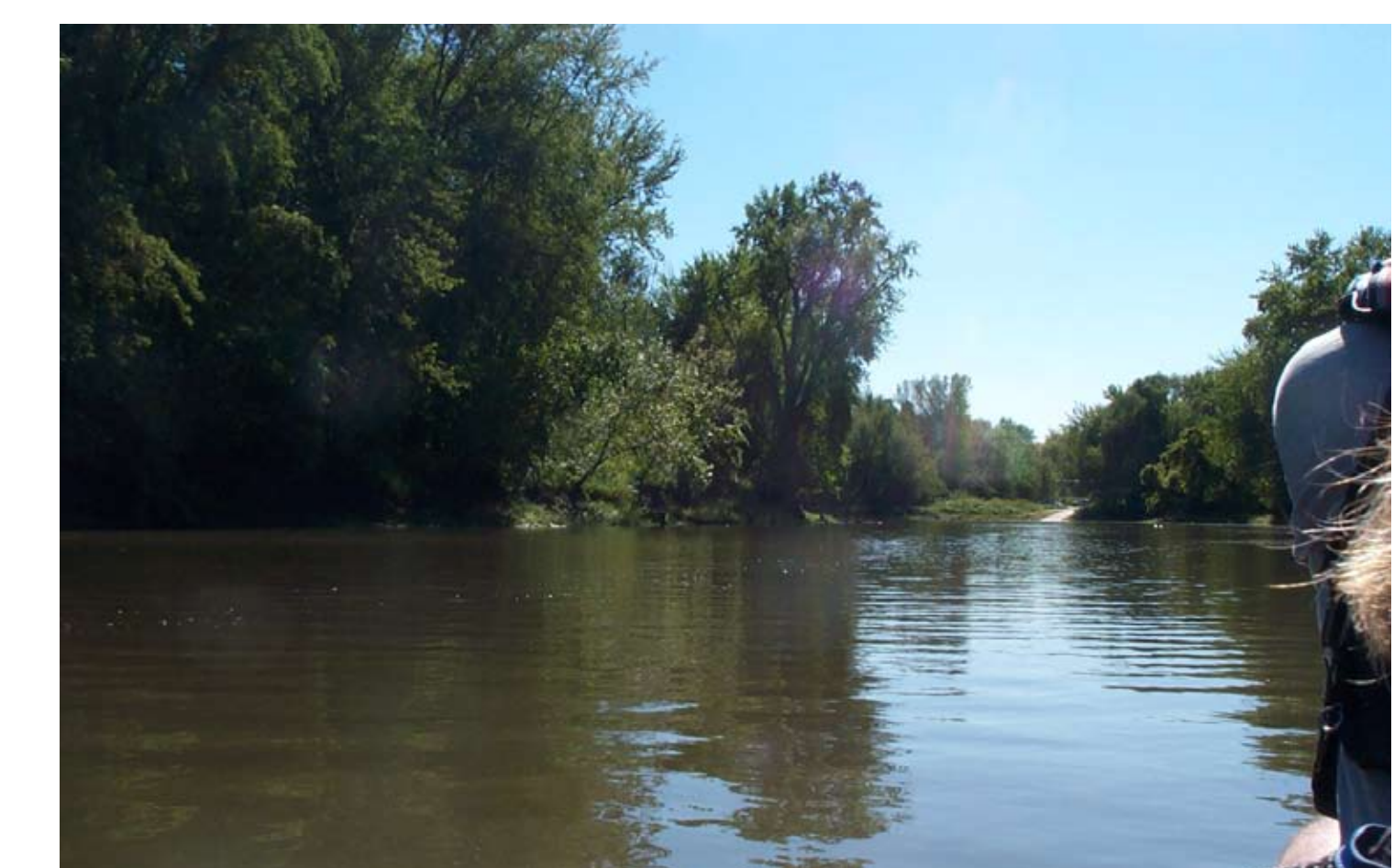
10th Street landing, pier in foreground, 10th St overpass gateway to floodplain area



Snag - one of several on trail, most can be circumnavigated



Channel widens in several areas downstream



Approach to the DNR boat ramp, this is part of the alternate route on the Mississippi River Water Trail (Truedale slough.)

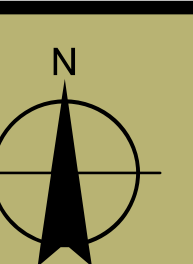
Vermillion River Water Trail

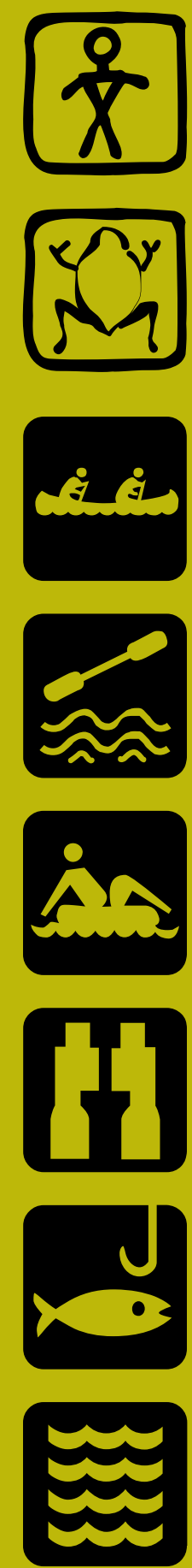
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
15



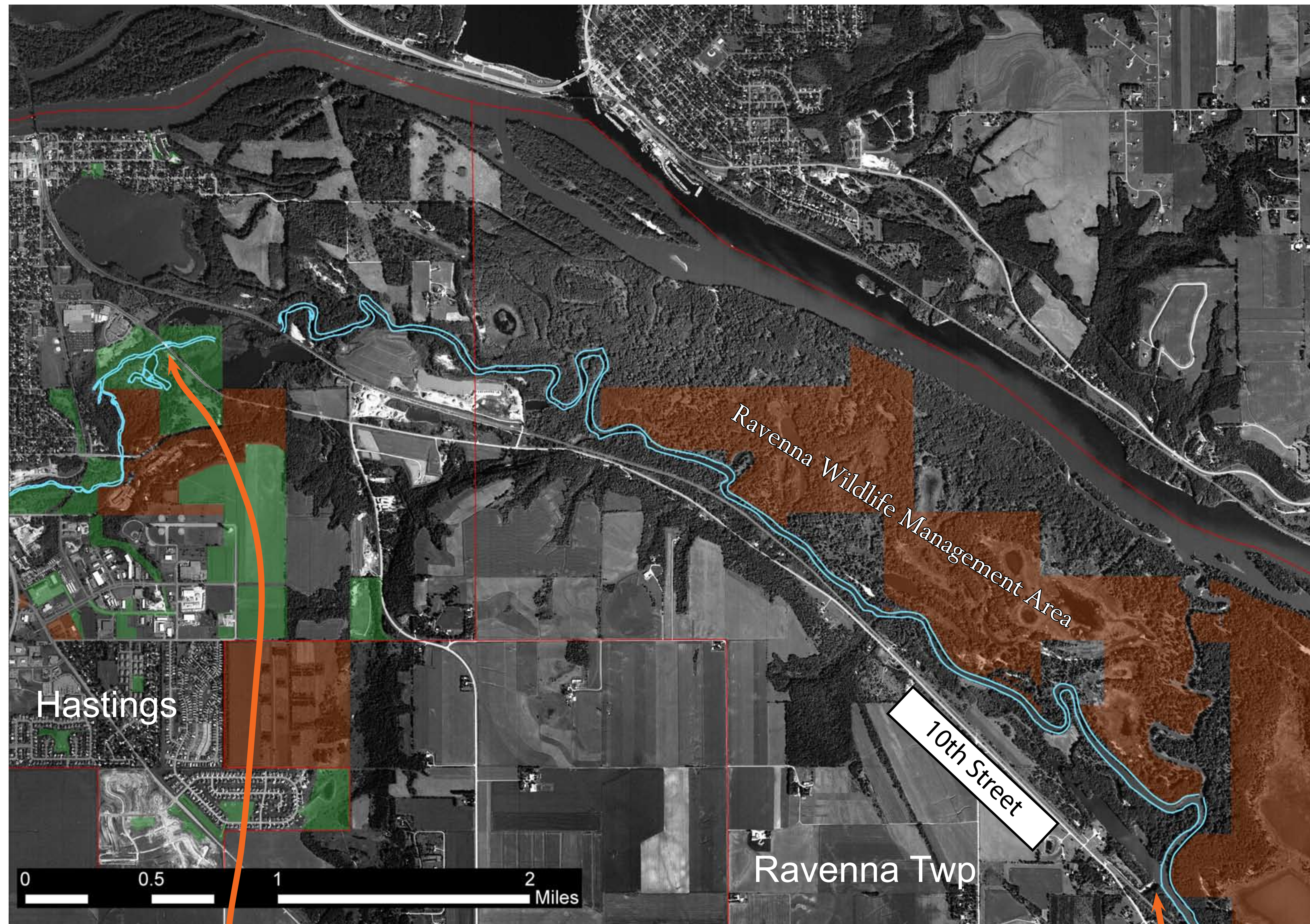


protect

educate

recreate

PROPOSED CANOE TRAIL - SOUTH TRAIL, HASTINGS TO RAVENNA TWP

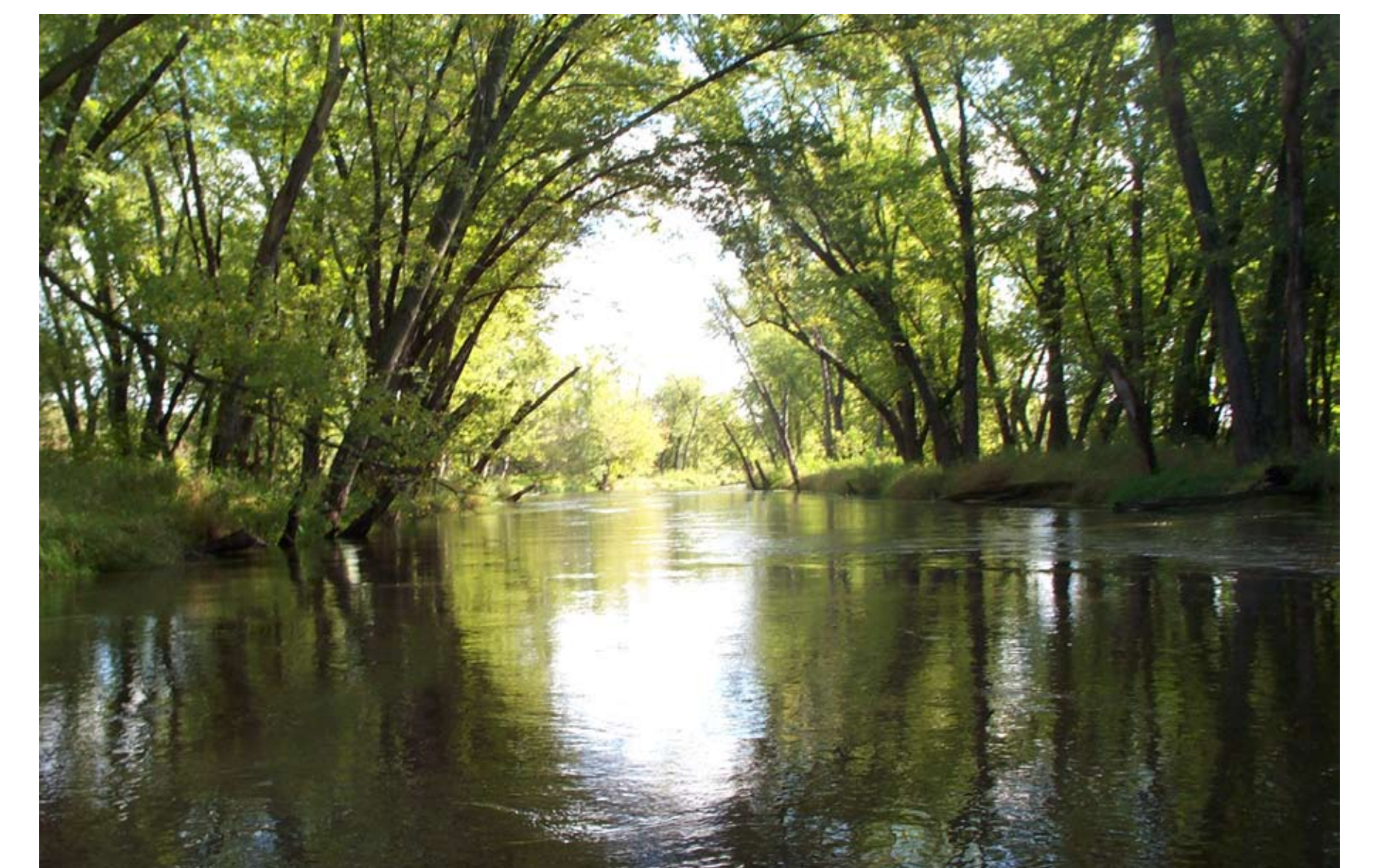


10th Street Landing

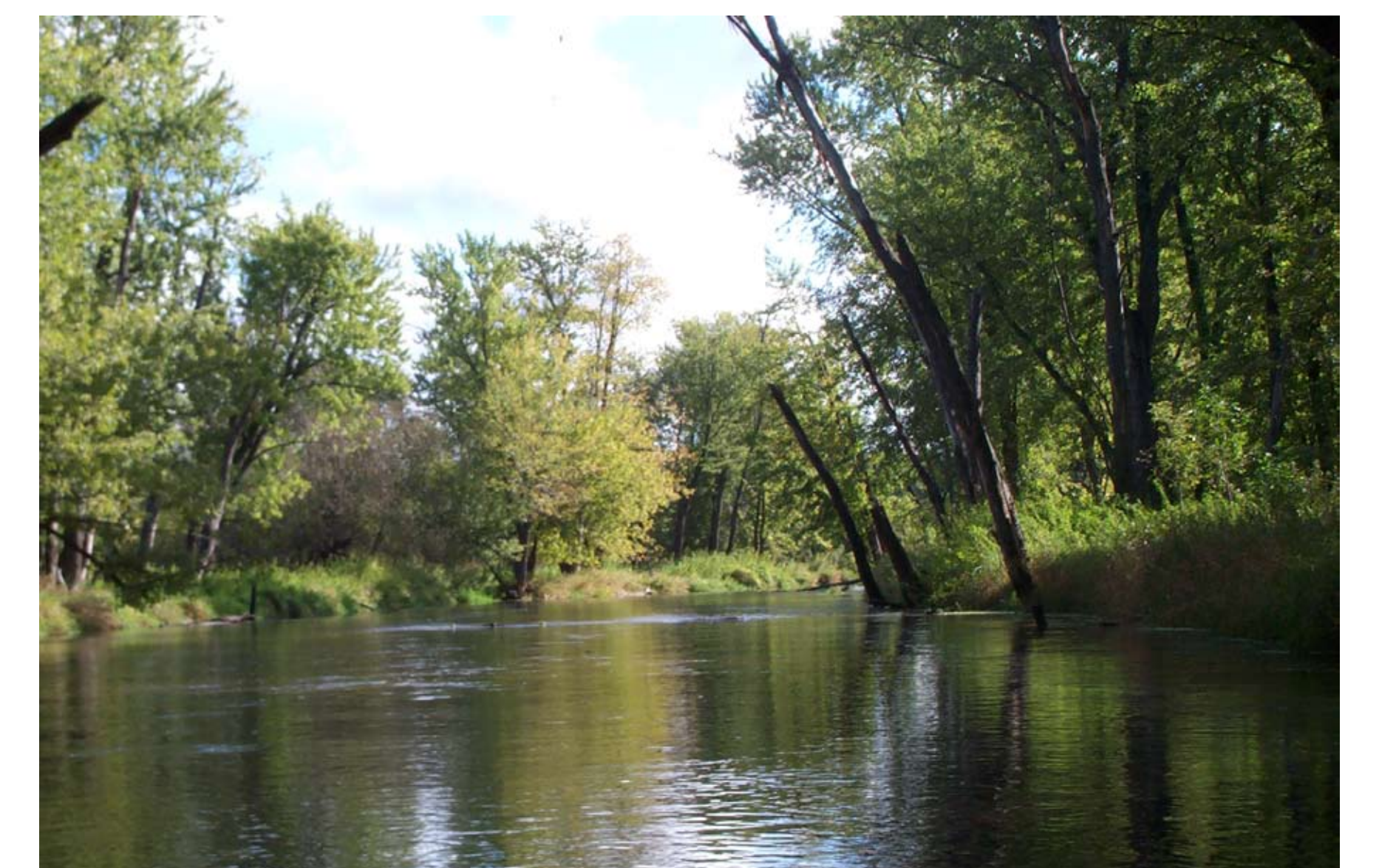
MN DNR Boat Launch - Ravenna Twp.



Downstream, 10th street overpass near proposed landing

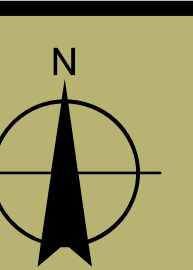


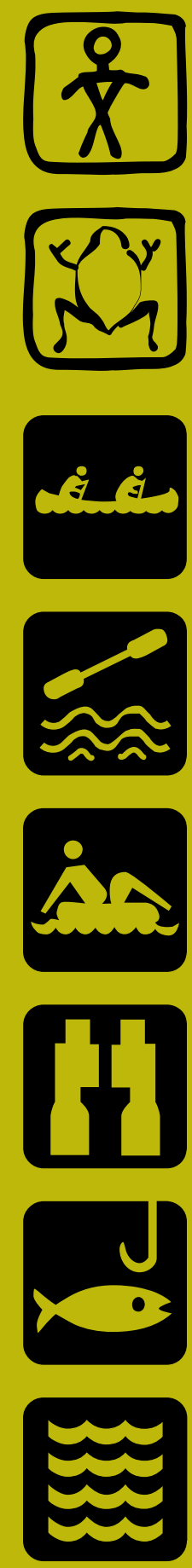
Allen beyond 10th street



Transitioning from wooded stream to floodplain habitat

The south water trail has several connection opportunities: the descent out of the gorge and the upper Vermillion Water Trail; the Mississippi River water trail above the convergence with the St. Croix River - a trail from the Hastings Marina, bypassing motor boat traffic; and an excellent starting point from the 10th street landing for a 4 hour paddle terminating at the DNR boat landing in Ravenna Twp. off Ravenna Trail (10th street or hwy 54.)



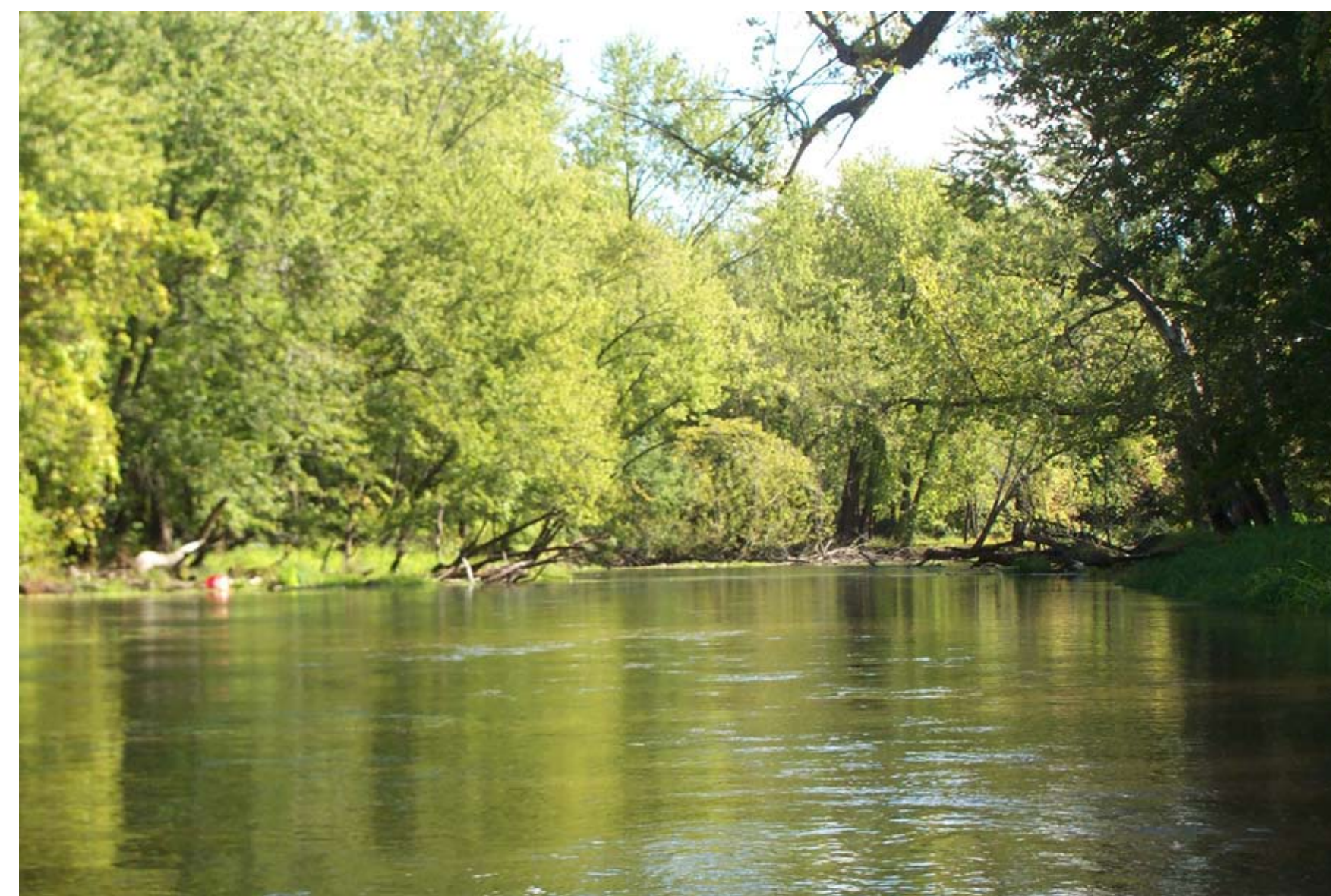


protect

educate

recreate

PROPOSED CANOE TRAIL - SOUTH TRAIL, HASTINGS THROUGH RAVENNA



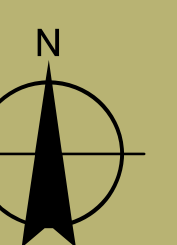
Vermillion River Water Trail

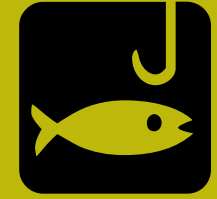
FVRWT
Friends of the Vermillion
River Water Trail

Center for Urban and Regional Affairs
Community Assistance Program
University of Minnesota, Summer 2005

Graduate Research by
Christopher Ochs
MLA and MURP Candidate

Board # of 20
17





protect

educate

recreate

The National Parks Service has prepared a useful document detailing a variety of launch types for a spectrum of terrain challenges. Examples of these launches were selected from this document that may best suit the difficult terrain challenges of the Vermillion River Gorge.

Source: Logical Lasting Launches, National Parks Service, U.S. Department of the Interior

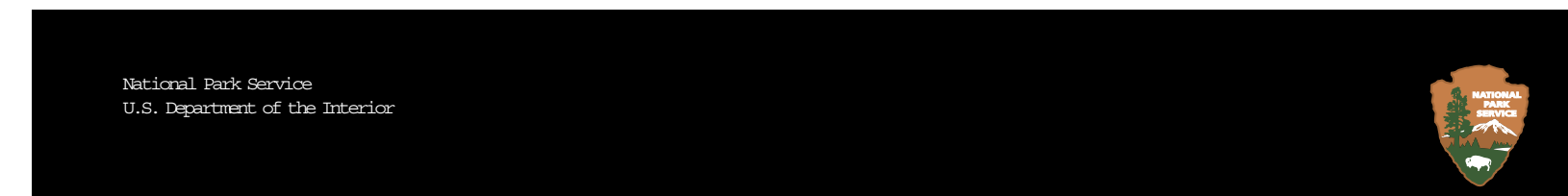


Photo 10F: Detail of metal staircase, wooden boat slide, and handrail



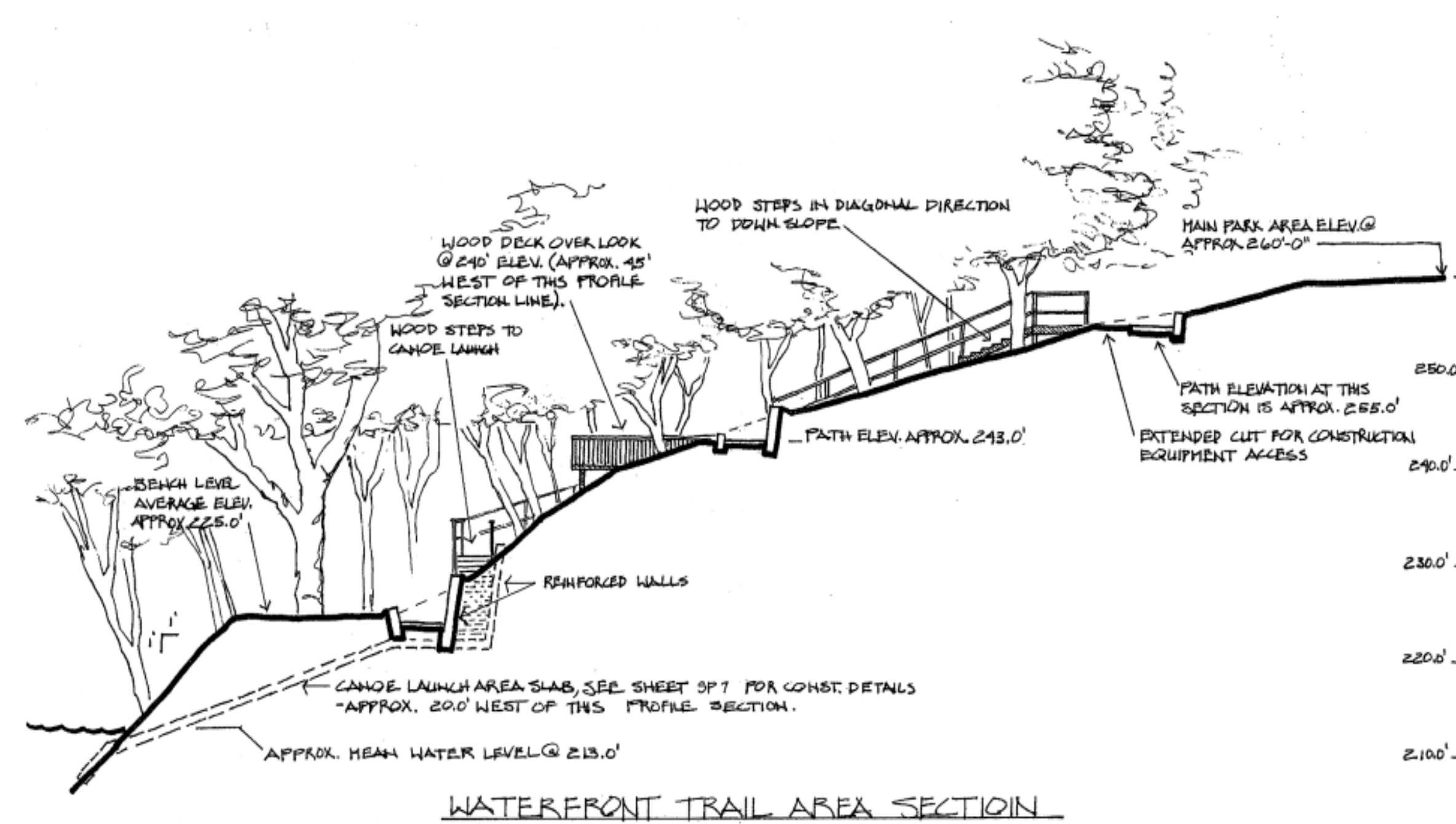
Photo 10G: View of launch area from top of staircase

Photos courtesy of Julie Isbill



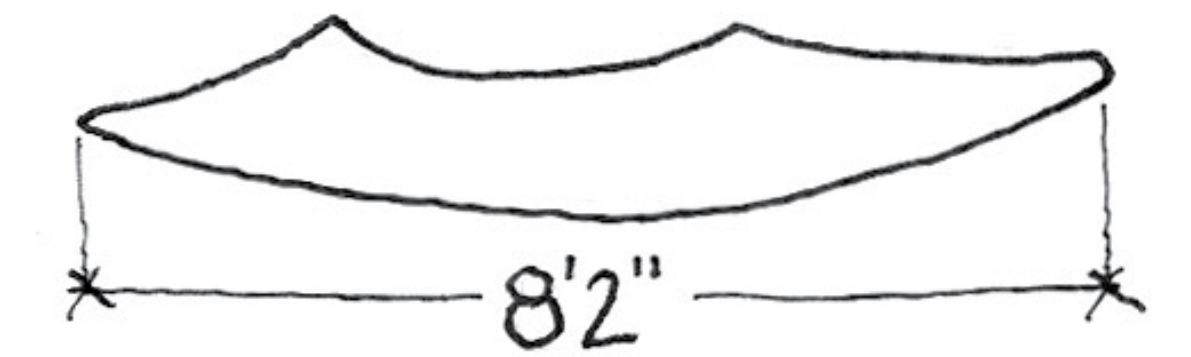
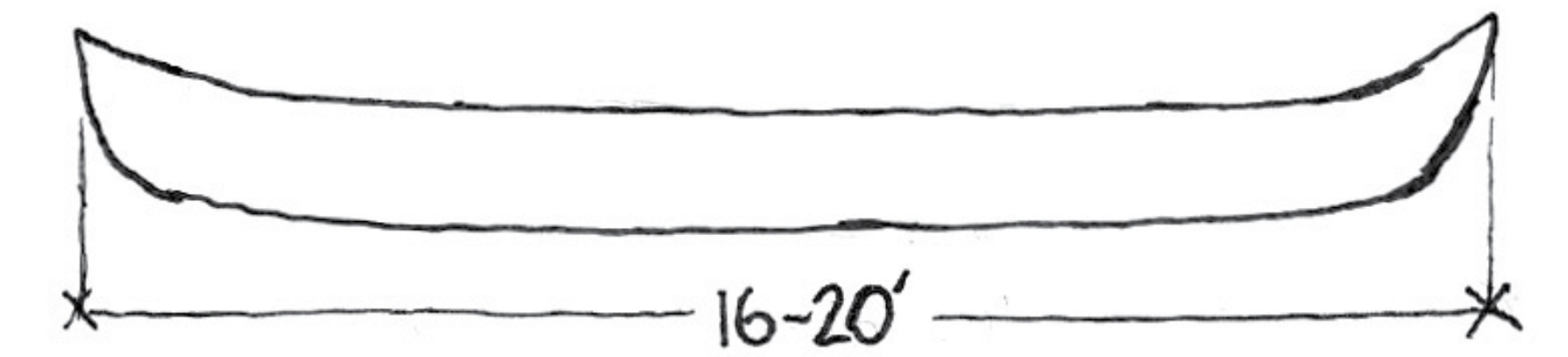
LOGICAL LASTING LAUNCHES

DESIGN GUIDANCE FOR CANOE AND KAYAK LAUNCHES

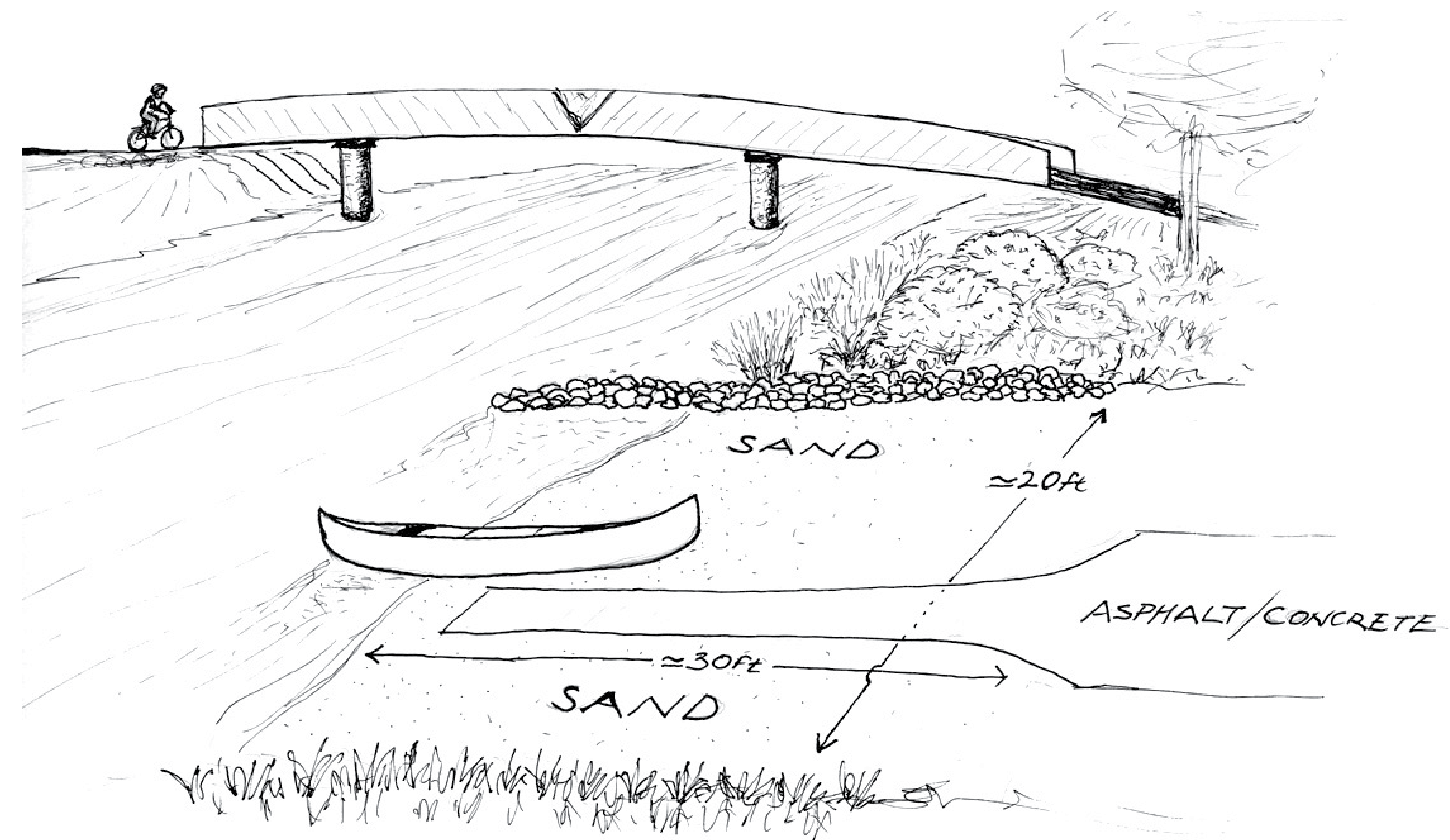


Design courtesy of Diana Steinbrook, Winterowd Associates

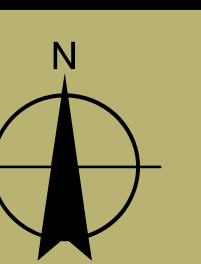
CANOE AND KAYAK LAUNCH CONCEPTS



Dimensions of watercraft used on the Vermillion River. Canoes are long and require adequate space for handling on terrestrial trails. Whitewater kayaks (bottom) are generally shorter and require less space.



Concept drawing of the 10th Landing at the 10th Street Lift station; re-aligned bike path is in the background utilizing existing piers from former railroad bed. Rip-rap and riparian woody vegetation help reduce erosion thus preserving landing during significant rain events and higher river volume. Canoe trailhead may provide access for all level of users including the physically disabled. The water trail continues into Bull Frog Pond and the Mississippi and St. Croix Rivers beyond.



The Vermillion River extends from its origins in Scott County at New Market Township, winds through Dakota County and terminates at two locations on the Mississippi River.

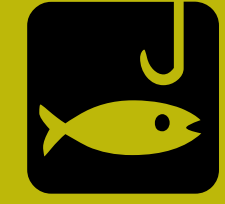
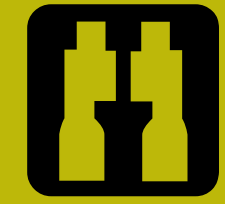
Canoeing the Vermillion River is feasible for most of the river, the prime beginning point is in Rambling River Park in the city of Farmington due to the existing public infrastructure. Some clearing of downed trees / snags may be necessary for reasonable passage but are not obstacles to the implementation of the water trail.

Portages are necessary prior to Vermillion Falls at Vermillion Falls Park in Hastings and a trailhead to continue the water trail is feasible at a point below Old Mill Ruin in Old Mill Park, Hastings. This portion of the water trail would continue to the Mississippi River and the St. Croix River water trails.

The Vermillion River Gorge is currently utilized by kayakers for its fast water features in a series of rapids. Improved accessibility will provide safer access to the put-in and take-out points and allow for proper maintenance and safety/rescue access.

Establishing the Vermillion River as a recreational water trail may provide opportunities for outside funding from various levels of government agencies, e.g. local municipalities, Dakota County, MN Department of Natural Resources and the National Parks Service.

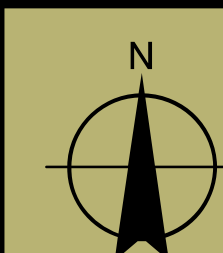
Creation of the water trail and improvements in the gorge may also provide economic opportunities for the cities along the Vermillion River. Increased awareness would attract recreational users to the water trail and increase the use of park systems for passive recreation such as birding, hiking, and biking. Additional tourists and recreational users create opportunities for local spending.

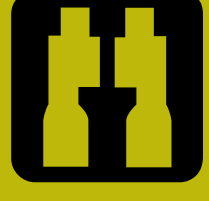


protect

educate

recreate





protect

educate

recreate

Research and presentaion prepared by:

Christopher J. Ochs, Graduate Studies Research
(Candidate for MLA and MURP degrees)
Through the Community Assistance Program (CAP)
for the Center of Regional and Urban Affairs (CURA),
University of Minnesota, Twin Cities

Resources and contributors:

Representative Denny McNamara
Susan Wilhite, MN DNR
Michele Hanson, MN DNR
Barry Bernstein, Parks and Recreation, City of Hastings
Kevin Smith, Parks and Recreation, City of Hastings
Paul Seleski, Fire and Safety, City of Hastings
Tom Montgomery, Public Works, City of Hastings
Laura Jester, Watershed Coordinator, Dakota County SWCD
Dave Holmgren, GIS, Dakota County SWCD
Todd Lusk, GIS Specialist, Dakota County
National Parks Service
Dakota County, URL
Dakota County Soil and Water Conservation District, URL
Department of Natural Resources, State of MN, URL
American Whitewater - <http://www.americanwhitewater.org>
Rapids Riders - <http://www.rapidsriders.net/>

Christopher Ochs
850 Dayton Avenue
Saint Paul, MN 55104
loons_ochs@comcast.net